

# Chemical INDUSTRIES

May 19, 1951

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# Week—



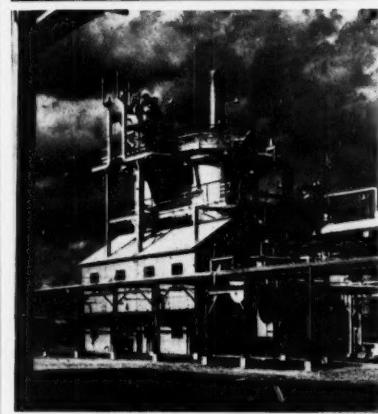
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**Chemical  
INDUSTRIES  
Week-**

May 19, 1951

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# OPINION . . .



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### Large Scale Benzhydrol

To THE EDITOR: In the article on Antihistamines (March 31), by Dr. Bernard Idson the statement appeared that Benzhydrol is not obtainable on a large scale. We have been manufacturing and selling Benzhydrol for several years, in substantial quantities. We should appreciate your correcting this error in the reasonably near future . . .

HARRY H. HACHEN  
Manager, Intermediates Division  
The Trubek Laboratories  
East Rutherford, N. J.

### Piperazine Available

To THE EDITOR: We refer to the article on antihistamines which appeared in your March 31st issue and particularly to the statement . . . that Piperazine is not available in bulk.

Your readers will undoubtedly be interested to know that this company has manufactured Piperazine on a commercial scale for a number of years . . . is actually supplying this product to drug companies which use Piperazine in the manufacture of antihistamines and other pharmaceuticals.

P. C. HERED  
Chemo Puro Manufacturing Corp.  
Long Island City, N. Y.  
A double fumble for Author Idson  
and CIW.—Ed.

### To be Big is Bad?

To THE EDITOR: Your excellent article on nylon in your April 21st issue, . . . gives perhaps the first clear picture of the tremendous capital requirements for producing a synthetic fiber.

It would appear that the total investment of Chemstrand in the production of 50,000,000 pounds per year of nylon will approximate \$120,000,000. . . . made up of approximately \$85,000,000 in permanent investment in plants and equipment and, as well as we can judge, about \$35,000,000 in working capital. Sales can be expected to run approximately \$100,000,000 per year, meaning a turnover of less than one.

It is quite probable that this plant . . . represents close to the minimum economic plant size for production of nylon. The net result, in terms of investment required, should give pause to those smaller companies which have looked with envy on the potential profits of a nylon.

In the same light . . . consider the

other synthetic fiber to be made by Chemstrand. It is apparent that the investment required by Monsanto for acrylonitrile and Chemstrand for the polymerization and spinning of the final product will run well above \$75,000,000, including working capital . . . not including the amount expended for research work to develop the fiber.

Such figures are rather staggering, yet they indicate quite graphically the necessary existence of big business. No one but big business could afford to make such investments in a single product.

We are forced to wonder whether those in Washington who seem to desire to break up big companies question the final value to the United States economy as a whole of the development of such things as synthetic fibers.

They can't have their cake and eat it too.

ROGER WILLIAMS, JR.  
President  
Roger Williams, Inc.  
New York, N. Y.

### Foreseen: A Sharp Drop

To THE EDITOR: I enjoyed Dr. Idson's article on Antihistamines (Mar. 31) considerably. It does emphasize the need for effective treatment in the field of allergy therapy. Unfortunately, . . . I foresee as sharp a drop in the popularity of these agents as we have witnessed a sky-rocketing purchase of these materials.

The theory that hypersensitivity in humans can be reduced to histamine effects is certainly not the complete answer—either that, or the antihistamines now available are not true antihistaminics, . . . it is known that those patients manifesting hypersensitivity, presumably from histamine release, do not respond completely to any one of the known antihistamines available today.

Also, however, . . . certain antihistamines work fairly well in certain persons whereas other antihistamines are valueless.

. . . We know, also, that many of the antihistamines have an antivirus, antibacterial and antifungal activity of varying degrees.

The successful use of antihistamines has, in many cases, been attributable to the fact that hypersensitivity resulted from an invading microorganism or virus. The extent of relief on using the antihistamines could, . . .

be traced to the destruction . . . of the invading material rather than blocking the eliciting of histamine.

Whatever the action of the antihistamines may be, their successful evaluation does not always depend on the ability to block histamine. We are still in the "hit or miss" stage with these drugs. . . .

Anemic responses have been detected with these drugs as with many other synthetics. It may be that the frequency of leukemia can be likewise attributed to the numerous synthetics which are now used in medication. . . .

. . . I am fully cognizant of the "wet-blanket" aspects of my viewpoint, but I am still not convinced that marked success has yet been exhibited in the field of antihistamine therapy, despite the sales figures and testimonials published.

HERMAN W. DORN,  
Director of Research  
Irwin, Neisler & Company  
Decatur, Ill.

#### Present Status Summary

TO THE EDITOR: . . . I have read the recent CIW Report on Antihistamines . . . Dr. Idson has done an excellent job of summarizing the present status of the subject in a few pages.

The section on raw materials and the list of tradenames of the various preparations are particularly useful.

CARL DJERASSI  
Assoc. Director of Organic Research  
Syntex, S. A.  
Mexico

#### New Antimalarial

TO THE EDITOR: We would like to know the chemical name for Primaquine, the new synthetic antimalarial compound still in the process of being tested . . . mentioned in your Newsletter, April 28 . . .

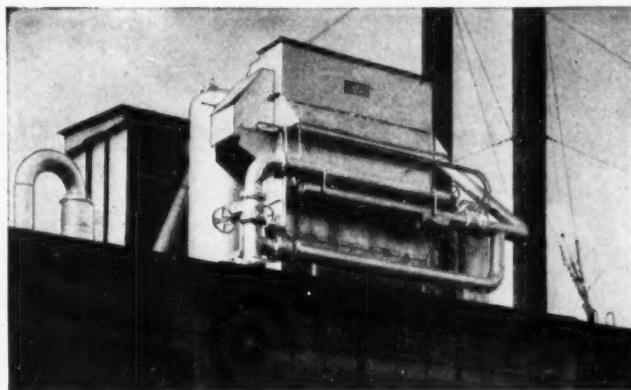
M. MARTIN MAGLIO  
Chemical Director,  
Vestal Inc.  
St. Louis, Mo.

Now being tested in Nicaragua, Primaquine is 6-methoxy-8-(4-amino-1-methylbutylamino)-quinoline.—ED.

CIW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Industries Week, 330 W. 42nd St., New York City.

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*Write for Bulletin 98*

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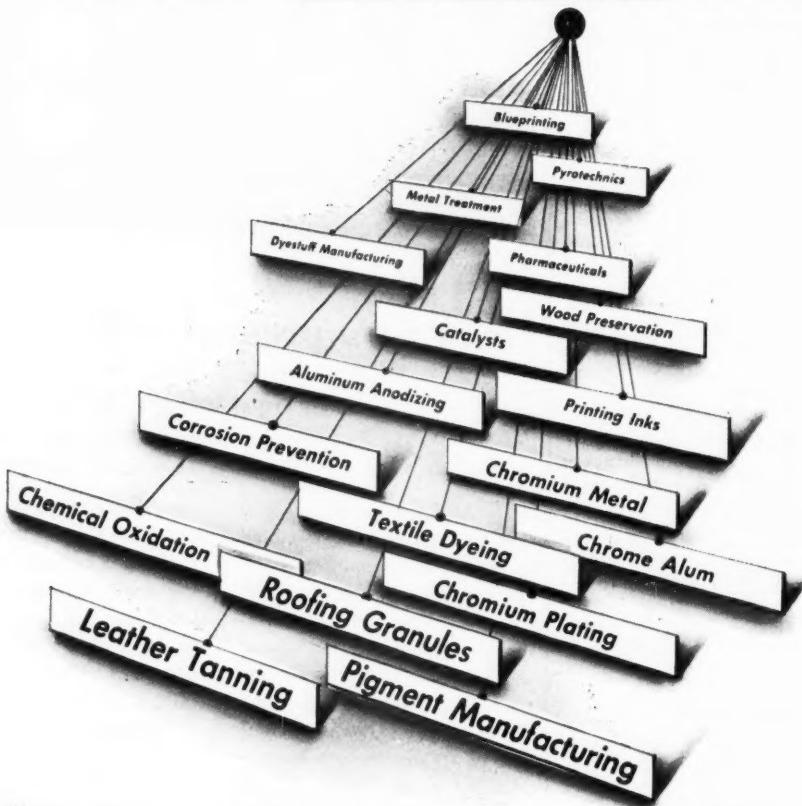
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## NEWSLETTER

This week Washington was feeling the repercussions of the price rollback (CPR 22), which the Office of Price Stabilization has scheduled to go into effect May 28 (CIW, May 5).

The chemical industry, through the Manufacturing Chemists' Association, has leapt into the fray with sound criticisms of the edict:

First, says the Association, the base period for determining prices—July 1949 to June 1950—was marked by depressed prices and hence was no criterion of normal operations.

Second, exclusion of maintenance materials in figuring cost increases is especially unrealistic in the chemical industry, where equipment bulk's large as a cost factor and corrosion cuts its life.

Third, the industry depends to a great extent on mined raw materials, which are exempt from price ceilings.

The MCA is backing up its arguments with specific case histories, asking for an extension to June 28, seeking a more realistic pricing approach by tailored supplemental orders on specific commodity groups.

Another beanball was aimed at the OPS by private-brand drugs and cosmetics makers, who asked for a tailored mark-up type of regulation to replace their present pricing under the general regulation.

A much closer-than-usual margin of profit prevails in their operations, they claimed, making a tailored regulation imperative for the continuance of the private-brand business.

Various developments this week, when pieced together, gave an aggregate picture of intensive military activity:

Ferro Enamel Corp., Cleveland, landed a Chemical Corps contract for \$5.5 million worth of incendiary bomb materials—thermite, powdered magnesium, and powdered silicon; and Ferro has also just completed a \$300,000 plant exclusively for napalm manufacture.

Meanwhile the AEC disclosed that employment at its reactor testing station in Idaho will almost triple by year's end—from the current 600 to about 1,600.

Construction workers on the project, now numbering 2,300, will increase to about 3,200 by late summer.

Bristol Laboratories, Syracuse, will add a four-story wing (40,000 square feet) to its plant—over and above its expansion plans announced some time ago. Reason: penicillin needs since Korea.

Much in the same category—since North American defense is the driving force—is Canadian progress on the proposed pipeline from Alberta to the Pacific Northwest via British Columbia (CIW, March 31).

The Canadian Government has allotted 12,000 tons of steel for an oil "tank farm" at Victoria, B. C., in anticipation of the line, and the provincial government of British Columbia has cleared the way with a bill providing for registration of right-of-way easements.

## NEWSLETTER

Shortages of chemicals continue to engender controls, and this week saw several NPA allocation and conservation moves.

Makers of degreasing equipment and of trichlorethylene have agreed, at NPA's behest, to put into effect several measures to cut consumption of the scarce chemical. Equipment makers will help users get maximum efficiency from their degreasers, thus cutting solvent usage; and trichlorethylene makers will reclaim used solvent shipped back to them by customers.

Polyethylene will be under allocation starting June 1. The two manufacturers—Bakelite and Du Pont—will have to apply to NPA for authorization to fill an order. Users will have to certify on their orders the end use of the material.

Tungsten will get price support by the General Services Administration in an effort to encourage discovery, development and production of domestic supplies. GSA will pay \$63 per short ton for all specification-grade concentrates that cannot be sold on the market—up to 1.5 million tons over a five-year period. (Demand is so great, however, that GSA doesn't expect to take possession of any material.)

Easing of cobalt controls is another side of the picture. NPA is considering modification of its M-10 order to permit use of cobalt in a wide range of pigments where it is now prohibited.

Getting a big play this week for national distribution is E. F. Drew & Co.'s Gleem, a car polish based on a high-viscosity silicone formulation developed by Drew and General Electric. This, and complete emulsification—which still allows soap-and-water washing of the polished car, are special advantages claimed.

Drew's automotive division is selling the polish nationally through service-station outlets, but now the firm is aiming for distribution through grocery, hardware and department stores. Pushed in six cities already, it is now being sold in Philadelphia and Newark.

American Chicle Co. decided to promote a chlorophyll-containing chewing gum (CIW, May 12), but not under its familiar Chiclets label. It is being sold as Crawford's Cloret—15¢ in a Chiclets-like box.

Look soon for a synthetic coolant that is claimed to be superior to currently used cutting and grinding oils. Called Ottocut, it is now being tested in Toledo tooling plants.

Another specialty field that is due for close scrutiny is antistatic agents for synthetic textiles. Many of the synthetic fibers build up an annoying static charge, particularly on auto seats, and the best remedy to date has been a swabbing with a nonionic detergent. Now many specialty makers are investigating better, more permanent treatments.

San Francisco won't get fluoridized water as soon as it expected to (CIW, April 28). The Board of Supervisors reversed itself and decided to put the question on the November ballot. Major reason: opposition by Christian Scientists, who claim fluoridation is enforced medication.

Clever idea at Du Pont's Experimental Station: The lobby directory in the Engineering Section has pictures of its personnel as well as room numbers—not so much for visitors as for better recognition among the staff.

... The Editors

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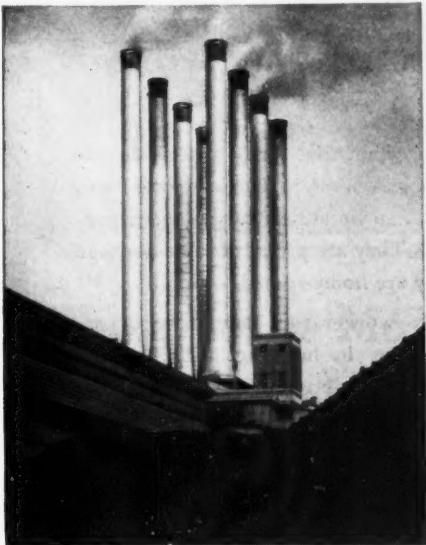
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# Chemical Newsfront

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## BUSINESS & INDUSTRY . . .



WESTVACO AT POCATELLO: Two more furnaces go up as . . .

### Phosphorus Moves West

Industry doubles rate of phosphorus expansion, increases capacity by 45,000 tons per year, spends \$20 million.

All new furnaces are ticketed for the Northwest, Idaho and Montana, as the center of production moves West.

Rapid rise of detergent builders provides firm basis for increase. Additional growing outlets: foodstuffs and ordnance.

Millions continue to be spent on new phosphorus production capacity. The 25% increase due to come in before the end of 1952 will cost well over \$20 million and will represent new plant for about 45,000 tons per year. Not only does this match the rapid pace of phosphorus expansion since World War II: It doubles it. Thus end-of-1952 production should be at an annual rate of 200,000 tons per year, compared with the war's peak of 85,000 tons in 1944. And more is to come.

**Shift to West:** Westvaco's first elemental phosphorus furnace at Pocatello, Idaho, marked the beginning of a shift to the West in the phosphorus

industry's center of gravity. Prior to that time more than 90% of the industry was confined to the Southeastern part of the U.S. with by far the largest part taking advantage of the Tennessee Valley's low power costs and large phosphate rock deposits.

Emphasizing satisfaction with its original decision to locate in Idaho, Westvaco is now building two more electric furnaces, which will more than double its capacity at Pocatello. In addition, it has been granted a certificate of necessity for a fifth furnace. At this point, however, it is problematical whether it will be built.

Victor is the latest to join the

Western migration. Its first furnace at Silver Bow, Mont., is scheduled to begin operation by the end of the year; its second, a year later. When these four furnaces—Westvaco's and Victor's—are completed, the West will manufacture about 30% of the U.S. total. First Western production, moreover, did not come in until August, 1949.

**Phosphorus and Plutonium:** Monsanto is awaiting results of its current study on whether it is practical to co-produce power and plutonium. The power would be used to add more elemental phosphorus facilities, very probably in the West.

The primary plant would transmute uranium to plutonium. Heat generated by the transmutation would provide steam for power generation. Even after a decision has been made to construct such a unit, it would be at least three years before production could begin. In any event Monsanto is interested in more phosphorus.

**Wet Process:** Any discussion of elemental phosphorus must include consideration of a very major competitor: the wet process for phosphoric acid production. Most phosphorus is burned to phosphorus pentoxide. This is absorbed in water and used as phosphoric acid. But years before elemental phosphorus became a tonnage item, phosphoric acid was manufactured by the reaction of sulfuric acid and phosphate rock. Despite the rapid growth of elemental phosphorus, production of wet-process acid has kept pace.

Phosphorus-derived acid was in the lead until March, 1950, when Blockson Chemical Co. brought in a large new plant near Chicago. Addition of this unit restored the balance. Im-

Phosphoric Acid Production  
(M tons)

Year	Wet Process	From Phosphorus	Total
1946	455	440	895
1947	483	555	1038
1948	611	606	1217
1949	602	733	1335
1950	792	803	1595

U.S. PHOSPHORUS PRODUCERS		
Producer	Location	Estimated Capacity M tons/yr.
Monsanto Chemical Co.	Columbia, Tenn. and Monsanto, Tenn.	65
Victor Chemical Co.	Mt. Pleasant, Tenn. and Tarpon Springs, Fla.	35
	Silver Bow, Mont.	25
Westvaco Chemical Div., Food Machinery & Chemical Co.	Pocatello, Idaho	37
Tennessee Valley Authority	Wilson Dam, Ala.	20
Oldbury Electro-Chemical Co.	Niagara Falls, N.Y.	8
Virginia-Carolina Chemical Co.	Nichols, Fla. and Charleston, S.C.	8
American Agricultural Chemical Co.	South Amboy, N.J.	3
		201

balance is scheduled to return, however. The Grasselli Chemicals Department of Du Pont has ceased manufacture of trisodium phosphate, from wet-process acid, at its Grasselli, N. J. plant.

**Better Detergents:** Most of the new expansion is ticketed for sodium phosphate. And most of this will end up as a builder for synthetic detergents—as sodium tripolyphosphate, made from phosphoric acid and soda ash.

Besides detergents, heaviest re-

quirements are in foods, ordnance and in the formation of antibiotics. At the present time ordnance is the most unpredictable of these. Ordnance demands, too, must be met, even if it means cutting down production of other materials.

**Important:** Impurities, mostly fluorides, in much wet-process acid make it unusable in antibiotics and food-stuffs. Thus the producer of acid from elemental phosphorus has a much wider market for his product.

## Pollution Control Needs \$12 Billion

About \$12 billion must be spent in the next ten years to preserve the industrial and domestic water sources of the nation. This flat prediction is made in a report released this week by the United States Public Health Service on the subject: "Water Pollution in the United States."

The \$12 billion, says the PHS, will be needed to construct an estimated

6,600 additional municipal sewage treatment plants and 3,500 more industrial waste treatment plants to make and keep water supplies clean and usable.

On the heels of the issuance of the report, however, officials of the Health Service recommended that the construction of the new facilities be pinpointed to areas in the greatest need.



POLLUTION ANALYSIS: \$12 billion will be needed to change results.

This, they explained, would be in line with Mobilization Director Wilson's recent request that non-defense and other "postponable" projects be deferred until after the current national emergency.

**Shocked Experts:** The report on pollution was issued concurrently with the Annual Conference of State Sanitary Engineers in Washington. And the extensive facts it contained came as a shock even to these experts. The magnitude of the pollution problem was quite evident in the publication, which marked the first presentation of national summaries of state and federal pollution abatement programs.

**Big Figure:** The most impressive fact revealed in the report was that there are more than 22,000 sources of water pollution in the country. Almost half of this figure (10,400) represents independent plant waste outlets. In 2,595 of these installations wastes are treated; in 3,659 they are not. Treatment facilities for the remaining 4,147 establishments were unreported.

**Types of Wastes:** Of the 10,401 industrial pollution sources reported, it is estimated that about 6,000 discharge organic or decomposable waste which is measurable in its polluting effect on the same basis as domestic sewage. More than 2,500 of the total figure discharge inorganic wastes which cannot be measured, however, on a population equivalent basis. The PHS report was unable to state the type of wastes discharged by the remainder of the industrial installations included in the survey.

**Performance:** The report goes to some length to point out that the mere existence of an industrial treatment plant is not always enough to lick a local pollution problem. Much depends on whether the treatment plant has great enough capacity and whether or not it is being operated properly. On this point the PHS report indicated that 1,090 industrial treatment plants were of adequate capacity while 657 were not. In the same survey 1,360 were rated as being operated satisfactorily while 316 received an "unsatisfactorily operated" tag.

**Future:** Evidently the managements of several industrial companies are well aware of the pollution situation as indicated in the report. Currently, industry has 114 treatment plants under construction, has approved final plans for 124 and has plans for an additional 410 on the drawing board. A good share of these plants are being built to treat the wastes of the chemical process industries.



TEXAS CASTOR CROP: For a dependable source, guaranteed prices.

## Double Dose For Texas

Rapidly growing industrial demand for castor beans is currently spurring processor's demands for all-out Texas crop development. Well suited to the area's climate and agricultural practices, the commodity is further bolstered by guaranteed prices.

Latin America is the major source of castor beans for the U. S. But burgeoning domestic demand and instability of foreign sources have prompted castor oil producers' efforts to secure a home-grown supply. Back in 1940, Texas Experiment Station at Chillicothe began trials to determine the practicability of castor bean production in that state. Commercial cultivation began 9 years later; in 1950 Texas had about 1,500 acres in the crop.

Past production is picayune compared to future plans. The Baker Castor Oil Co. alone wants 500,000 acres in castor beans, and will supply seed enough for a healthy start in that direction. In addition, the company expects to build a new hulling plant at Brownwood to double capacity of its present set-up at Vernon.

**Good Yield, Good Price:** Average yield of Texas-grown castor beans was 504 pounds per acre last year. Improved varieties—soon to be available—will probably double this figure within several years. Baker guaranteed farmers a price of 6¢ a pound at the start of last year's growing season, but the price was up to 11¢ a pound at the close of the harvest. The government has fixed the minimum

price of this year's crop at 10¢ a pound—about 3¢ higher than normal. Cost of hand-harvesting and hulling runs to nearly 3¢ a pound, allowing a substantial margin of profit to the grower.

The crop has not been successful

in other states despite ease of cultivation, profitable yields, resistance to disease and insects, and a minimum of attention. Reason: Farmers in most states are reluctant to undertake the manual labor required by the crop. But Texas farmers, accustomed to hand-hoeing and hand-harvesting cotton, find castor beans right up their alley. Moreover, the leguminous plant makes a good substitute for grain and cotton acreage.

Although castor oil is probably best known as a hard-to-swallow medicinal, the great bulk of the material finds its way into industry. Dehydrated oil, with drying characteristics halfway between linseed and tung, is used in the manufacture of a variety of paints and varnishes. Castor oil is broken down to yield caprylic alcohol and sebacic acid—both useful in plastics manufacture—and may also be treated to give the fungicidally-active undecylenic acid. The oil itself is in demand as a plasticizer for nitrocellulose lacquers, and has an established market in textiles. Hydraulic brake fluids and shock absorbers also take a share of castor oil supply.

Even the pulp of the bean (after the oil has been extracted) has been found useful in making many chemical products; however, most of this work is still in the research stage.

## Small Business Gets "Sell" Info

Business-seeking small businessmen have for some months been directing a lot of complaints at Government purchasing organizations (*CIW, April 7*). One big squawk has been that Washington procurement officials seem to prefer to deal with the big companies, who know how to handle the necessary paperwork, rather than with the small outfits who aren't always up on what regulation covers what.

This week, however, it appears that the small businessmen, may be on the verge of getting a few bigger breaks along this line. In a word, their pressure on Congressmen seems to be bearing fruit.

**Army Helps Out:** The Army, for instance, plans to open up an additional 34 information centers (on how to sell to the Government) in 16 states. This will extend the services of the 28 centers now in operation. Information on how to sell to the Army Engineers will be dispensed at 16 of the new centers; to the Chemical Corps, at 2; to the Transportation Corps at 2; and to the Signal Corps at 1.

In addition, the Munitions Board is busy assigning small-business special-

ists to procurement offices maintained by the military departments around the country. And only small companies need apply for the help of these experts.

**Civilian Agencies:** But the armed forces are not the only ones to act on the plight of the confused small manufacturer. This week, the Defense Production Administration and the National Production Authority have completed plans for the almost immediate opening of a special Inquiry Center. Its main function will be to help businessmen find their way through the maze of mobilization orders and procedures in which they now find themselves. The new center will be set up in the main lobby of the old General Accounting Office Building at 5th and G, Northwest, Washington, D. C.

**Field Offices First:** There's no doubt the new center will become a Mecca for Washington-bound business men. At present DPA and NPA handle some 2,500 inquiries a day. And the chances are that this figure will triple. But the agencies still sound a plea for more businessmen to avoid Wash-

## BUSINESS & INDUSTRY . . .

ton and make use of the field offices in their native cities.

**Oasis for Answers:** The new Center will be staffed by persons who have either specialized industrial backgrounds or governmental experience in particular fields. In addition to furnishing information, this staff has the job of arranging appointments for

businessmen with the DPA and NPA operating officials who can supply particularized data.

There seems little doubt that if the new Center and other developments along the same line do their job, the man who sells by the carton will get the same break as the man who sells by the carload.

ally the basis is a 15 year tenure).

**Office Pool:** But there is much more involved in the plan than the placement of all salesmen at one address. By consolidating the sales personnel, Cyanamid spokesmen claim, it will be possible to obviate much of the duplication of expensive office functions that occurs when several divisions of a company maintain separate sales offices in a city.

According to the plan, the Office Manager of a consolidated office (and warehouse) will have the job of supervising all of the sales-supporting activities of the regional office. In a word, his main task will be to keep the local sales processing machine working at maximum efficiency. This will enable the sales managers assigned to the office to concentrate on their main duty of getting the orders . . . not processing them.

**Many Jobs:** The Office Manager of a consolidated Cyanamid office will be a very busy man. For in addition to order processing he will be in charge of the maintenance of all clerical activities, office services, transmittal of orders to shipping points, warehousing activities, invoicing of shipments from local stocks and follow-ups on deliveries. And he will have supervision over the entire staff needed to perform these operations.

**Local Committee:** To preserve straight line, on-the-spot authority, the Office Manager, under the Cyanamid plan, reports to a committee consisting of divisional sales managers assigned to the local office. Each year, this committee elects one of its members as chairman, who supervises and confers with the Office Manager on all matters affecting the operation of the local office.

**Good Solution:** The design of the Cyanamid plan should furnish thought-food for sales executives of other multi-divisional, multi-product chemical companies. There are times when it pays to put all your eggs in one basket.

### Exit The Lab Boy

It had to happen sooner or later—and this week did. A research laboratory plagued with the common "who washes the glassware" problem, installed a Westinghouse automatic dishwasher. Objective: to save money, skirt labor shortages, yield more research hours. With labor at a premium, American Bio-Synthetics Corp.\* was hard-pressed to find someone to wash its laboratory glassware. Although the

\*Of Milwaukee, Wis.



\*GOAL: Consolidate sales services . . . give salesmen more time for selling.

## One Roof, Lower Overhead

American Cyanamid will open consolidated sales offices and warehouses in four major cities this summer.

Company's long range plan calls for pooling of sales-supporting services in many regional offices.

**Aims of plan:** Lowering of unit sales processing costs, increased local inventories, better service to customers.

Summer may be a slow period in the business life of many companies . . . but not at American Cyanamid. Within the next four months, the company will formally open consolidated sales offices and warehouses in St. Louis, Chicago, Boston and Los Angeles. The aim of the consolidations: better sales service to customers and at a lower cost.

Actually these housewarmings will mark the completion of only a part of the master plan of the company to consolidate sales offices and warehousing activities in those cities where more than one division of the company is represented, e.g., Lederle, Calco, Agricultural Chemicals, etc.

To date consolidation has occurred in New York, Philadelphia, San Francisco and Cincinnati. And plans are being shaped to place sales forces in other cities under one Cyanamid roof.

**The Plan:** No one at Cyanamid knows exactly when the consolidation plan first started to percolate in management minds. But a little over a year ago the Working Committee was set up under the chairmanship of L. C. Duncan, head of the company's Priorities and Allocations Department. The committee worked.

The plan evolved called for the acquisition of buildings in the cities concerned by two methods: the leasing of a suitable existing structure, the construction of a building to Cyanamid specifications on the basis of a guaranteed, long term lease (usu-

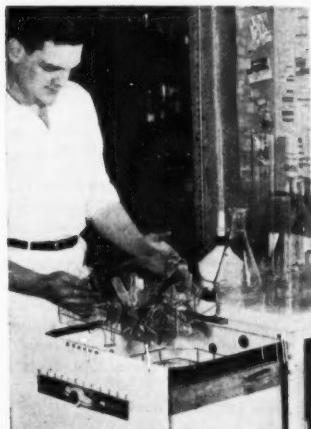
\*Some members of Working Committee: J. A. Murray, G. W. Van Schaick, Chairman L. C. Duncan, J. M. Kingston.

job doesn't require a special talent, a certain amount of know-how is helpful. Local women were taken on, briefly trained in proper chemical cleaning procedure, and turned loose in the lab.

Breakage expense soared. Gallons of solvents and detergents went down the drain, but flasks and beakers usually needed a second trip to the sink. Costwise the experiment was a flop. Moreover, breakage of hard-to-replace equipment entailed exasperating (and expensive) research delays.

Technical director Hamilton A. Pinkalla was more than a little perturbed, when the automatic dishwasher idea came via a Westinghouse TV commercial. It was obvious the machine did a fine job on the family dishes, but could it handle the chemist's special cleaning demands? A tryout proved it could. After less than 15 minutes in the machine, most glassware emerged clean and dry; heavily soiled objects required two or three wash cycles. No doubt, there will be occasions calling for a strong arm and a stiff brush, but it looks as if they will be the exception rather than the rule.

Lab Chemist A. Rosenthal is happy with his silent new helper. When glassware stacks up, he loads it, flips the switch, and goes about his business; no lost time, no broken equipment. Salary savings are obvious and detergent use is down about 25%. American Bio-Synthetics estimates the machine will pay for itself in about two months. Well satisfied, it will include automatic dishwashers in several soon-to-be-built research laboratories.



CHEMIST ROSENTHAL: Flips the switch, loses no time or equipment.



PLYWOOD MANUFACTURE: Wood glues, other growing markets. . . .

## Call for More Resorcinol

**Waterproof wood glues**, sizing resins and pharmaceuticals are calling for more resorcinol than present production—estimated at 4 million pounds a year—can supply. Borden Co.'s chemical division has revealed plans for a plant at Tacoma, Wash., and now Heyden is rebuilding its Garfield, N. J., plant (partially destroyed by fire in February) and doubling its capacity to 600,000 lbs. a year.

Not only is Heyden currently doubling its resorcinol capacity, but it will apply to the National Production Authority for a certificate of necessity on further facilities to bring its output up to a hefty million pounds a year.

Heyden estimates current production at 4 million pounds; and since its

own is admittedly 300,000 pounds, that tags Koppers Co.—the only other current producer—with 3.7 million pounds annual capacity.

Upon completion of Borden's and Heyden's proposed projects, resorcinol output will rise very shortly to about 5.7 million pounds. Koppers Co. presently has no definite expansion plans.

Current emphasis on higher resorcinol production stems largely from military needs for waterproof, fungus-resistant wood glues. More expensive than commonly used adhesives, resorcinol glues are used in plywood PT boats, helicopter blades, skis, aircraft components, etc., where cheaper materials aren't suitable.

## Isocyanates Catching On

Research studies on production and applications of organic isocyanates have begun to bear fruit for several Monsanto divisions. Most recent offerings are ethyl isocyanate for pharmaceutical use, polyisocyanates for rubber and synthetic fibers, and isocyanate additives for producing foamed plastic resins.

The rapid growth of isocyanates is indicated by 48 patents issued for applications of isocyanates since 1941. These patents were in such widely different fields as adhesives, drying oils and paints, rubber modification, plastics and plastic fibers, and textile treatment, coatings, and waterproofing. The horizon seems destined to continue widening.

Monsanto first undertook isocyanate production at the request of the National Defense Research Committee in 1944, was granted permission to build a phosgene plant by Chemical Warfare Service later that year, and went into production early in 1945. Additional information on German processes, research, and applications was received from FIAT (Field Information Agency, Technical) after Germany's surrender. Considerable information on the German "Desmodur" type compounds was made available.

Monsanto's own experience in production and study of German activities has resulted in the development of new and more efficient processes. Details are not available, but it is un-

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## Drying Oils "Bodied" in Half the Time

Raw oils—linseed, soya and tung, for examples—are unsuitable for use in paints, varnishes and printing inks. They must be "bodied," given added viscosity and quicker drying properties.

"Virginia" engineers have demonstrated that the catalytic action of sulfur dioxide does four important things: (1) speeds up polymerization, (2) cuts heating time in half, (3) blankets oils in process against atmospheric oxidation, (4) produces a lighter colored, more salable end product, all this while nearly doubling the output of existing equipment!

This is typical of the way in which "Virginia" chemicals and technical aids have been giving yeoman service in 40 widely diverse industries over the past 29 years. Low-cost, versatile "Virginia" SO<sub>2</sub> is in special demand as a reducing and bleaching agent, preservative, anti-chlor, neutralizer, and pH control. "Virginia" is the world's largest producer of SO<sub>2</sub>.

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*Chemicals*

derstood that they follow the general pattern of German practice, as uncovered by FIAT. Basic reaction is that of phosgene with a primary amine.

Monsanto expects to establish this chemical family as important members of our industrial economy. Octadecyl isocyanate, *m*-tolylene diisocyanate, phenyl isocyanate, and ethyl isocyanate are already available, and others will probably follow shortly.

## Slurry Savings

British research, directed at the production of water-gas from low grade coal, promises to reduce household fuel costs and stretch industrial coke supplies.

Experimental work, under way at the British Fuel Research Station, Greenwich, England, is converting waste coal to useful water gas. Now in the pilot-plant, the new process is really an adaptation of fluid bed technique.

Steam is forced through a bed of finely divided coal washery slurry, under conditions designed to facilitate optimum yields of carbon monoxide and hydrogen. Water gas is conventionally manufactured by basically the same process, except that chunks of high-grade coke are used as the raw material. Finely divided fuels are not suitable to existing techniques as they tend to pack tightly under their own weight, preventing the circulation of steam.

Researchers have gotten around this difficulty by introducing steam from below the bed at a pressure found experimentally to keep dust particles in loose suspension.

The new process, if successful in full-scale operation, would cut water gas production costs by an estimated 50% and result in considerable savings to the consumer. At the same time, over a million tons of coke a year would be released for industrial purposes and heating fuel.

## FOREIGN . . . . .

**England:** In order to provide for the most effective use of the scarce commodities—sulfur and sulfuric acid, the Board of Trade has announced that as of May 1, 1951, detailed allocation schemes for their distribution were put into effect. Basing these plans on a consumption of sulfur at the rate of about 100,000 tons per quarter, it will mean that users will receive from 80%-90% of their total 1950 consumption.

**Chile:** Solar evaporation in large tanks, measuring 210 by 230 yards by 20 inches deep, will be used at Maria

Elena, Antofagasta province, to produce potassium nitrate crystals — a method improving on current systems which require fuels.

**Germany:** Numbering some 4,000 firms, West Germany's chemical industry has regained its prewar export level, with reconstruction sufficiently progressed to permit an annual turnover of about 8 billion Deutschmarks and the employment of 300,000 people.

#### KEY CHANGES . . .

**Kent H. Smith:** From president to board chairman, Lubrizol Co., Cleveland.

**Kelvin Smith:** From v.p. research to president, Lubrizol Co.

**Howard Raymond:** To assistant purchasing agent, equipment section, Dow Chemical Co.

**John E. Charters:** To assistant purchasing agent, raw materials, Dow Chemical Co.

**Frank B. Wolcott:** From New Jersey Zinc Co. to general manufacturing manager, Wyandotte Chemicals Corp.

**Kenneth E. Mulford:** From assistant general manager to general manager, Industrial Chemicals Dept., Atlas Powder Co.

**J. Peter Kass:** From associate research director to research director, Atlas Powder Co.

**F. E. Strauch:** To Midwestern district manager, Innis, Speiden Co.

**Kurt H. C. Holzheuer and Paul C. W. deJong:** To assistant directors, N. V. Hercules Powder Co., Holland.

**Fred H. Haggerson:** To board chairman, Union Carbide and Carbon Co.

**Arthur C. Emelin:** To president, Schenley Laboratories, Inc.

**Alfred Iddles:** From president to chairman of board, Babcock & Wilcox Tube Co.

**Luke E. Sawyer:** From executive v. p. to president, Babcox & Wilcox Tube Co.

**James Wilson:** From assistant supervisor, Pittsfield branch, to supervisor, General Electric's Taunton, Mass., plant production section in chemical department.

**Malcolm S. Burgess:** To director of sales, Thiele Kaolin Co.

**George L. Innes:** To assistant sales manager, Jefferson Chemical Co.

FOR MEN CONCERNED WITH COLOR

## How floor covering manufacturer solves tough pigment problem

A large manufacturer of floor covering materials for many years purchased an imported red iron oxide. This oxide was used in coloring linoleum. Uniformity of quality, as well as close limits of tolerance on color, tint and strength were part of the specification.

Trouble arrived when the imported oxide became contaminated with foreign matter which made it necessary to screen each shipment. It also varied considerably in tinting and strength characteristics. This made necessary frequent formula changes.

The floor covering manufacturer came to Williams with the problem. A substitute pigment was developed which met the manufacturer's specifications perfectly . . . and manufacturing control was established to hold the product within necessary tolerance limits.

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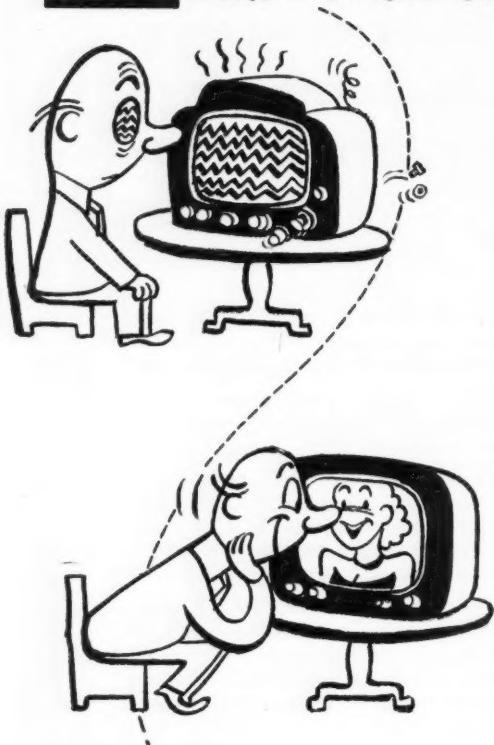
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## EXPANSION . . .

**Foote:** Late this month Foote Mineral Co. will begin a \$215,000 expansion of its lithium production facilities at Exton, Pa. It will double output of the metal. Ore will be shipped in from recently acquired ore deposits at Kings Mountain, N. C.

**Blackman-Uhler:** A new textile laboratory has just been opened at Spartanburg, S. C., by the Blackman-Uhler Co. The concern is southern representative of Hilton-Davis Chemical Co.

**Electromet:** Double its output of calcium carbide and ferro-alloys will result from an expansion planned by Electrometallurgical Co. (division of Union Carbide and Carbon Co.) at its Portland, Ore., plant.

**Edwal:** Early in June, Edwal Laboratories, Inc. will bring in a new unit at Ringwood, Ill., for the production of ammonium thiosulfate crystals. The expansion includes a new building, a continuous (stainless steel) rotary dryer.

**National Cylinder:** A liquefaction unit for the manufacture of oxygen and nitrogen will be opened in Miami, Fla., by the National Cylinder Gas Co., Chicago. Initial production is scheduled for August.

**Pedlow-Nease:** A new company, Pedlow-Nease Chemical Co., Lock Haven, Pa., has been formed to custom manufacture organics — particularly pharmaceutical intermediates. Principals: Wesley Pedlow and Aubrey Nease.

**M-3:** Canadian Minnesota & Mining & Manufacturing Co. has located its head office at London, Ont. It holds options on a 100 acre site in that city, may build a \$2 million plant there. Basic criterion: availability of water.

**Dominion Tar:** Shareholders of Standard Chemical Co. Ltd. have approved an arrangement under which the company will be sold to Dominion Tar & Chemical Co. Ltd.

**Westinghouse Electric:** A shortage of zirconium has caused Westinghouse to convert part of its Bettis Field Laboratory to produce the rare metal. The lab is presently working on the development of a working model of the atomic submarine engine.

**Chromium Mining & Smelting:** Construction of a \$1.5 million electro-metallurgical plant at Glendive, Mont., is being contemplated. Plant would produce ferrochrome from Montana chromite ore at a rate of 2 million lbs. per month.

# RESEARCH . . .

## Ethylene Imine Seeks Jobs

Stepped-up ethylene imine research is aimed at development of many potential commercial applications.

Textile and paper processing accounted for tonnage lots of the chemical in Germany. . . .

But here it is still a costly research commodity—price will be drastically slashed as large scale markets appear.

**Ethylene imine**, brash newcomer to the American chemical scene, is this week the recipient of an unaccustomed share of research attention. Simplest of the nitrogen-containing heterocyclics, the highly reactive compound was a standard item on the I. G. Farben shelf; but although German production at Ludwigshafen was measured in tons, the material never got more than a passing glance on this side of the Atlantic.

But things are different today. Release of a great deal of German technical data since the close of World War II focused attention on ethylene imine and sparked serious consideration of its commercial potential. There certainly was enough food for thought; applications (many of them patented) range from adhesives to textiles—and then some.

Paper technology was high on the Germans' list. They found that adding an aqueous solution of polyethylene imine to the beater stock improved the paper's wet and rub strength more than similar treatment with urea or melamine resins. Wet strength of the finished paper was maximum when a 1% to 2% solution of polyethylene imine was used. Retention of the additive depends upon the basicity of the polymer, chain length, and the nature of the celulosic material being treated.

Added polyethylene imine advantages: it is easy to apply, serves as a dye mordant, improves dewatering in the paper machine and retention of loading materials added to the stock. Polyethylene imine-processed papers are suited to many special jobs. They are highly absorptive and proved a boon in aviation gas-filters because their wet strength prevented shredding and passage of fibers into the filtrate. Towels, napkins, bandages, and gaskets are other successful applications.

Ethylene imine and derivatives also come in for duty in the preparation of several rubber vulcanizing chemicals. Reaction with thiuram disulfide

yields a viscous oil, useful as an accelerator and activator; addition products of alkylene imines with zinc mercaptide or ammonium dithiocarbamate have comparable virtues.

**I. G.'s Best:** The textile industry is perhaps the most important potential market for ethylene imine. N-Octadecyl-N'-ethylenurea—made by reacting ethylene imine with octadecyl isocyanate—is a hydrophobizing agent which carried the German tag, Persistol VS. It is generally conceded to be the best of the I. G. water repellents.

Effectiveness of N-octadecyl-N'-ethylenurea is due in great measure to the ethylene imine fragment of the molecule. Current theory is that the heterocyclic nitrogen reacts with an active hydrogen from a cellulose hydroxyl to split the ring and attach the 18-carbon, hydrophobic chain to the cellulose fiber. Water repellency gained from Persistol VS is unharmed by ordinary laundering and dry cleaning.

Another likely textile outlet for ethylene imine is in the preparation (by the reaction of 1 mol of hexamethylene diisocyanate with 2 mol of ethylene imine) of hexamethylene diethylene urea, used to impart a wool-like appearance\* to fabrics. Vinyl resin textiles treated with 0.1% aqueous polyethylene imine develop marked anti-static properties; similar treatment effectively reduces tendency of rayon and cotton to swell. Cotton cloth can be flameproofed by immersion in boiling aqueous polyethylene imine and subsequent reaction with pentaerythritol tetraorthophosphate.

**Dyed in the Wool:** Addition of ethylene imine increases the chemical resistance of many synthetic resins. Acid- and alkali-resistant materials have been produced by reacting ethylene imines with albuminous substances, then polymerizing with aromatic isocyanates. A more general method for synthesis of inert resins involves the treatment of aryl cyanates



PROCESSING PAPER STOCK: Added strength from polyethylene imine.

and isothiocyanates with ethylene imines. Resin-impregnated cotton or viscose rayon, made acid-stable in this manner, is suitable for wool-dyeing processes.

Lubricating-oil additives with anti-corrosion and anti-sludge characteristics result from the reaction of ethylene imines with thiols. Promising new adhesives are obtained from ethylene imines and carboxylic acids, especially acrylic. Army Chemical Corps research, pointing up the high bactericidal activity of ethylene imine, has opened the door to further investigation of the compound as a practical sterilizing agent.

A clear, colorless liquid, ethylene imine is miscible with water, the common organic solvents, and chlorinated hydrocarbons. It is highly corrosive and easily chews up organic matter and many alloys. Satisfactory handling and storage materials include tin, lead, low-carbon steel, polyethylene, Kel-F and Teflon plastics.

The Germans used Hastelloy metal and pure iron equipment to make ethylene imine from  $\beta$ -chloroethylamine. The product, contaminated with impurities, polymerized on very little provocation—often at an explosive rate. Careful detective work put the finger on the bad actors—extraneous chlorine-containing compounds; and it has subsequently been shown that ethylene imine prepared from chlorine-free reactants could be preserved indefinitely in the anhydrous state. Stability is further increased by storage in contact with solid caustic.

Current syntheses result in a prod-

\* Often termed "animalizing" from the German "animalisieren".

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## RESEARCH . . . . .

uct free of polymerization-promoting agents. Impurities are dimers and polymers, easily separable from the unassociated ethylene imine by distillation.

**Markets Needed:** Chemirad Corp. is pioneering ethylene imine development in this country. Latest reports show a great deal of industrial interest. But the compound is still a research item and available as such from Chemirad and Monomer-Polymer, Inc. Price, today an obstacle to commercial utility, could be drastically slashed with the appearance of a first-rate market.

Toxicity is an undeniable hazard in handling ethylene imine, but no more so than with many other industrial chemicals. Understanding of the problems and exercise of normal precautions will successfully cope with it. An experienced ethylene imine chemist says, "We have never noticed any physiological effects beyond headache discomfort and eye-rednessing. Our safety record undoubtedly is due to the fact that we are aware of the dangers and . . . know what to do about them."

**Cortisone Source:** Attempts to extract a cortisone raw material from a Florida vine, have not been successful. The report—several years ago—that cortisone had been produced from seeds of a strophanthus plant—native to Africa—spurred the research. Florida variety, strophanthus sarmentosus, unhappily is a different species.

**New Standards:** The American Petroleum Institute now has available two new API standards. They are: 2,2-dimethylheptane and 2-methyldecane. They are available from the Carnegie Institute of Technology, Pittsburgh.

**Core Dyes:** General Dyestuff Corp. has come up with a group of dyes for marking cores used in electromagnets and induction coils. Dyes incorporated with carbonyl iron powder stand up under core-production conditions and do not materially reduce electrical properties or *rupture* strength of the final product. Sold as G A & F Carbonyl Iron Powders, dyes are stable to humidity, high temperature, and molding pressures.

**Chlorine Tester:** Rapid determination of approximate chlorine concentration in cleaning and sterilizing solutions is facilitated by test papers available from the LaMotte Chemical Products Co. Effective range—between 50 and 200 ppm.



AARON WEXLER: A thin skin prevents heat influx.

## Colder Longer

New insulating container, developed at Westinghouse Research Laboratories, foreshadows the possibility of shipping extra-low-temperature liquefied gases at atmospheric pressure.

Helium, as well as other low-boiling gases, cannot be effectively stored in the liquid state long enough to permit shipment over any appreciable distance. Researchers using helium for low-temperature investigations must buy the gas and liquefy it themselves.

A new vacuum bottle promises to eliminate consumer liquefaction and cumbersome, high-pressure gas cylinders. Thin-walled and spherical, the improved container will hold four gallons of liquid helium at 8 F above absolute zero for more than three months—all this at atmospheric pressure.

Credit for the invention is shared by Westinghouse's Aaron Wexler and Howard S. Jacket of Hofman Laboratories, Inc. (Newark, N. J.). Their brainchild consists of a copper sphere within a larger evacuated sphere of the same metal; loading is through a long, narrow tube. Entire device—about a foot in diameter—is submerged in a tank of liquid nitrogen.

According to the inventors, the inlet neck is the area of greatest heat influx. Judicious design cuts heat transfer here by 90% and makes the new insulating container more than 15 times as efficient as the best previous models. Westinghouse researchers—probing the mysteries of the super low-temperature range—predict even greater efficiency with further improvements.

# 42

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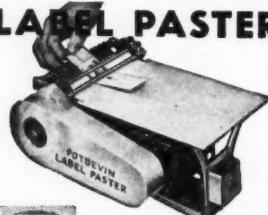
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Four models — 6, 8½, 12 and 18 inches (hand and motor driven)—to label any size or shape of container, with any style of label. POTDEVIN'S are quick and clean. Stick permanently to glass and metal surfaces. POTDEVIN'S patented glue regulator controls amount of adhesive, eliminating excess and keeping ungummed side perfectly clean.

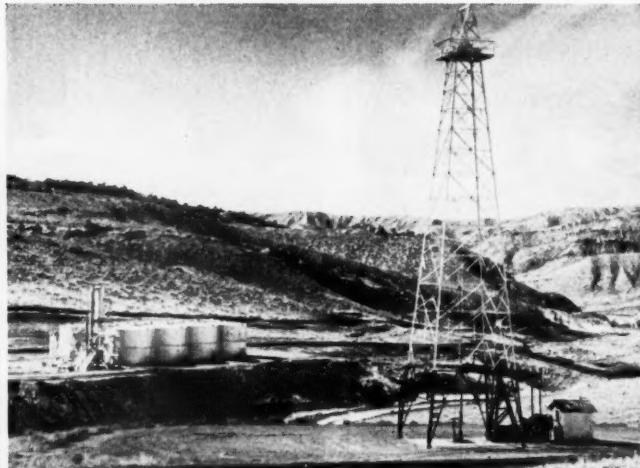
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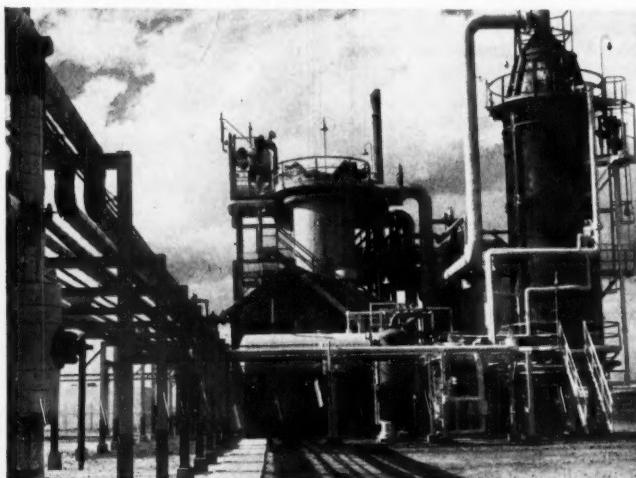
HYDROGEN SULFIDE in Wyoming natural gas, formerly a nuisance, is now an asset. Stanolind Oil & Gas Co.'s plant at Elk Hills, Wyo., can recover 80 tons per day.

## PRODUCTION . . .

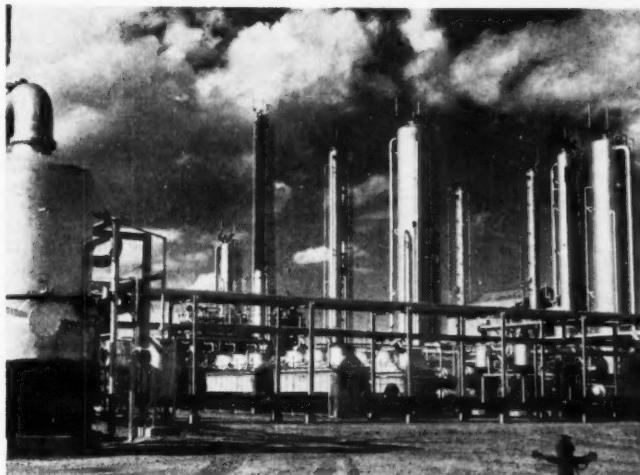
### "Sour" Gas Pinch . . .

Attempts to ease the critical sulfur shortage have worked to promote hydrogen sulfide from the role of an undesirable stench to that of a valuable asset. Typical of the installations in which "nuisance" hydrogen sulfide provides a welcome source of sulfur is that of the Stanolind Oil and Gas Company's natural gasoline plant at Elk Hills, Wyoming.

The Stanolind plant is a sign of the trend. Within the last year construction has been started by several companies on at least seven new plants for the recovery of sulfur from petroleum-derived hydrogen sulfide. Up until now, the cost of removing hydrogen sulfide has put a damper on the use of the gas as a sulfur source. But the sulfur shortage changed that



ACID GAS from the amine unit is mixed with additional incoming gas which has been burned to sulfur dioxide. This mix reacts over bauxite to form sulfur.



THE FIELD GAS is first scrubbed (left), LPG recovered (center), and hydrogen sulfide removed from the residual gas by contacting with ethanamine (right).

Chemicals  
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convince...  
cajole...



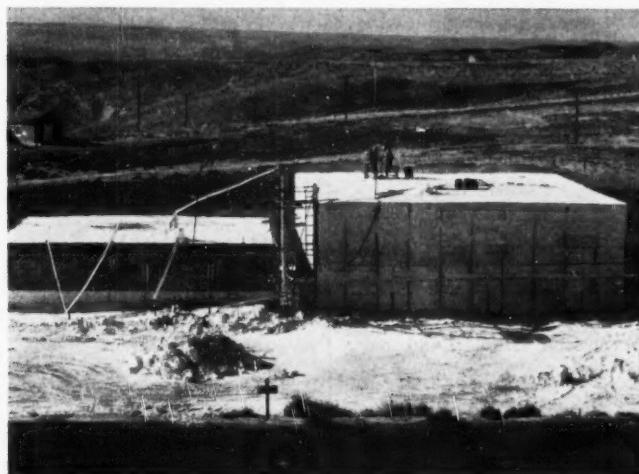
## Hits For Brimstone

thinking . . . considerably.

The hydrogen sulfide recovery plants use an interesting combination of processes to exploit the gas as a source of sulfur. A modern version of the ancient Claus process is used to effect the formation of elemental sulfur from the hydrogen sulfide. And the recently developed ethanamine process is employed for the absorp-

tion and easy regeneration of the acid gases. In anticipation of a greatly increased demand for ethanamine in this use, Dow is already expanding its ethanamine production facilities at Freeport, Texas.

A separate plant using the Claus-ethanamine combination requires a daily intake of about 30 tons of sulfur per day to break even when operating



SULFUR (2500 tons in a single storage pile) is recovered from the gas issuing from the catalyst chamber by condensation in a waste heat boiler.

The time and hour call for chemicals with compelling personalities... chemicals with dynamic qualities that IMPROVE YOUR PRODUCTS...that make them look better, smell better, taste better.

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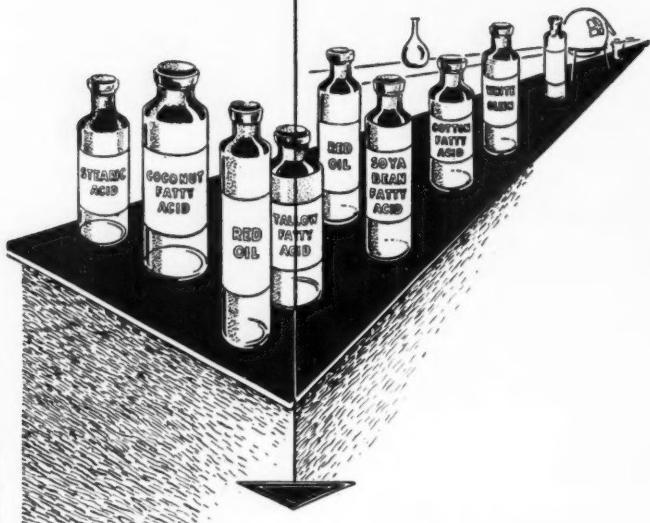
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Acid Value	195 — 198
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## PRODUCTION . . .

on a natural gas containing 6-7% hydrogen sulfide. However, plant capacities as low as five tons per day are believed practicable in units which are integrated with natural gasoline recovery plants.

**Claus Up-To-Date:** The original Claus process dates back to the days when the Leblanc process supplied industry with soda ash. Here a waste liquor containing large quantities of dissolved calcium sulfide was produced. It soon became impossible to dump this hydrogen sulfide-producing material as the authorities began one of their earliest attacks on air pollution. Claus provided an answer.

By this method the calcium sulfide solution was carbonated with carbon dioxide from the lime kilns. The hydrogen sulfide that was formed oxidized with a limited supply of air over a ferric oxide catalyst to convert it to elemental sulfur vapor.

The present process varies from the original process in two respects. (1) A bauxite catalyst replaces the ferric oxide. (2) A portion of the hydrogen sulfide-containing gas is burned to sulfur dioxide and mixed with the original gas before contacting the sulfur-producing catalyst. The sulfur results from the reaction of the sulfur dioxide and hydrogen sulfide. Mathieson's McKamie, Ark. plant also has one other innovation. Liquid sulfur scrubs the sulfur vapor from the offgases. But, in other plants the sulfur is recovered by condensation in a waste heat boiler.

**With Amines:** Amines or amine solutions are used to separate acid gases, such as hydrogen sulfide, from hydrocarbon gases. At room temperatures salts are formed which can be quantitatively decomposed for gas regeneration by a temperature increase.

The ethanolamines have been adopted almost exclusively for hydrogen sulfide recovery. Triethanolamine was the first to be employed as it was the first to be available in commercial quantities. Today, diethanolamine is usually used for the separation of hydrogen sulfide from refinery gases as it is inert to the small quantity of carbonyl sulfide which is often present. The more reactive monoethanolamine is the choice for natural gas purification, however.

**Old and New:** The combination of the old (Claus process) and the new (ethanolamine recovery of acid gases) has tapped a vast new sulfur supply at a most critical period. At the same time it has enabled the use of formerly useless supplies of crude oil and natural gas.

**ARMOUR***Chemical Division***Fatty Acids****Long-Chain Fatty Acid Derivatives  
Industrial Oils****Durable Water Repellents from Fatty Amides**

"Armid" is the Armour trade-name given to the general class of long chain fatty amides derived from fatty acids. These high molecular weight amides are high-melting, wax-like materials. The commercially pure amides are water-insoluble and neutral.

One amide in this series, Armid HT, has superior properties for water repellency applications when compared with paraffin and natural waxes.

The excellent water repellent properties of Armid HT derivatives are due primarily to the combination of the amide grouping with a long, saturated straight chain. Durability of the water repellent effect results from the relative insolubility of the derivatives under dry-cleaning operating conditions, and from their high-melting points and poor emulsification characteristics with the soaps and detergents used in laundering.

Armid HT is composed of 25% hexadecane amide, 70% octadecane amide and 5% octadecene amide, is off-white in color and has a melting point of approximately 98° C.

In contrast with the chemical inertness of the hydrocarbons, Armid HT is reactive chemically. Advantage has been taken of its reactivity with formaldehyde in particular to prepare thermally unstable quaternary ammonium salts. These are applied to fabrics from aqueous solution and decomposed under heat to leave an insoluble, durable water repellent



residue within the fabric. Reactivity with formaldehyde also permits compounding of stearamide or its derivatives with thermosetting resins to produce durable water repellent effects. Many of these thermally unstable compounds, however, are covered by patents and those patents should be consulted.

Armid HT is packaged in flake form in 100 lb. multi-wall paper bags. For samples or additional information on the Armids, mail the coupon below.

**Low-Temperature Solvent Crystallized Oleic Acid**

Another new product has been added to Armour's line of fatty acids. Already the manufacturer of the most complete line of high-purity distilled fatty acids that can be found anywhere, the Armour Chemical Division now offers low-temperature solvent crystallized oleic acid.

This exclusive process offers users of oleic acid a product that has advantages not found in ordinary distilled or pressed products. The extremely low temperatures employed guarantee a substantially lower saturated acid content than conventional types of oleic acid. In addition, solvent crystallized oleic acids are ester-free materials since the solvent used is not reactive with fatty acids. This new product is characterized by bland odor and has excellent heat stability.

Armour's low-titer White Oleic Acid meets U. S. Pharmacopeia specifications and is recommended for those uses that require a light color as well as a low titer. For applications that require a low titer but not a very light color, low-titer Distilled Red Oil is recommended.

**White Oleic Acid  
(Low Titer)**

	<u>Min.</u>	<u>Max.</u>
Titer	—	5°C
Iodine No. (Wijs)	90	95
Acid Value	195	201
Saponification Value	195	201
Unsaponifiable	—	2%
Color (Lovibond 5½" tubes)	—	1.5R-15Y

**Distilled Red Oil  
(Low Titer)**

	<u>Min.</u>	<u>Max.</u>
Titer	—	5°C
Iodine No. (Wijs)	90	95
Acid Value	193	200
Saponification Value	193	200
Unsaponifiable	—	3%
Color (Lovibond 1½" tubes)	—	8.0R-30Y

Armour's Oleic Acids are available in 55 gallon drums and aluminum tank cars. Write today for samples and prices.

**Lard Oil  
Lubricants**

Lard oil possesses the property of "oiliness" so essential in the lubrication field. In addition, lard oils are readily saponified when treated with alkalies and possess non-drying qualities.

Where a high grade lubricant is required, as in drawing copper and brass tubing, Extra Winter Strained Lard Oil is recommended. Its low free fatty acid content makes it ideally suited as a base for such products.

Extra Winter Strained Lard Oil is only one in a complete range of lard oils offered to the lubrication field by the Armour Chemical Division. Write today for your free copy of a chart showing "Specifications for Armour Industrial Oils."

**Reading for  
Research Chemists**

To help research chemists, the Armour Chemical Division continually prepares informative literature on chemicals derived from fats. The two technical bulletins described below are available free of charge.

For research chemists interested in fatty amines (organic bases or alkalies made from fatty acids), Armour has prepared a detailed 24-page bulletin entitled, "The Chemistry of Fatty Amines."

"The Chemistry of Fatty Acids" is the title of another technical bulletin offered by the Armour Chemical Division. It describes fatty acids, their composition, reactions, and derivatives.

Either or both of these booklets are yours for the asking. Use the coupon below to make your request.

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## PRODUCTION . . .

### Uses Less Nickel

Critically-short nickel and chromium will be saved by a new electroplating process developed by Westinghouse Electric Corp.

In the new method, a layer of copper—about 1/1000" thick—is first plated on the steel base. If nickel is available, a second layer, half the thickness of the copper, is deposited on the copper coating. A 1/100,000" coating of chromium completes the job. If nickel is not available, the chromium is plated directly on the copper. But this method produces an inferior coating.

The new process contrasts with the conventional method in two ways: First, the older method plated nickel on steel and then chromium was superimposed. Second, instead of using ordinary direct current as in the older technique, a periodic reversal of the electroplating current (PR plating) is employed.

The deposition of metal and periodic re-solution of metal that takes place in PR plating provides a much smoother coating. Microscopic examination of direct current-plated objects discloses a relatively rough surface; the new PR process produces a much smoother plate.

Apparently, when the current is reversed, the inferior metal deposits are dissolved and succeeding layers are always plated on sound metal.

**High-Vacuum Measurement:** Operating conditions of high-vacuum pumps can be readily checked at a number of locations with Eastman Kodak Co.'s new multi-station thermocouple gauge. Pressure range: 5 to 1,000 microns.

**Expansion-Type Bellows:** Titeflex, Inc., is now producing an expansion-type bellows to absorb high-frequency vibrations and lineal expansion in piping systems. The height and wall thickness of the convolutions of the metal diaphragms can be varied to meet requirements. Sizes: 1" to 5" I.D. Materials of construction: plain and stainless steels, brass, bronze, Monel and Inconel.

**Tubular Heaters:** Electric heat, without carbonization and decomposition of oils, tars, resins and other organic materials, is provided by low-flux tubular heaters now produced by the Hynes Division of Martin-Quaid Co. The trick: low heat density at the surface of the heating units. There are no liquid joints, and the tube-held heating elements can be removed without draining the vessel.

# SEQUESTRENE

**SYNONYMS:** ethylenediamine tetraacetic acid; ethylene bisimino diacetic acid; ethylene dinitrilo-tetraacetic acid.



*Available as:*

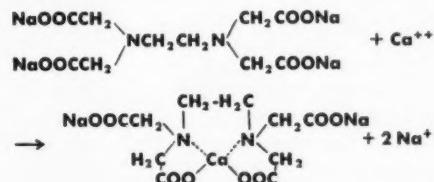
- SEQUESTRENE® AA ethylenediamine tetraacetic acid  
(tech. pure)
- SEQUESTRENE NA2 disodium ethylenediamine tetraacetate dihydrate
- SEQUESTRENE NA3 trisodium ethylenediamine tetraacetate monohydrate
- SEQUESTRENE NA4 tetrasodium ethylenediamine tetraacetate dihydrate
- SEQUESTRENE A: tetrasodium ethylenediamine tetraacetate aqueous soln.
- SEQUESTRENE ST: tetrasodium salt 80% powder
- SEQUESTRENE A is a colorless liquid; the other SEQUESTRENEs are non-hygrosopic white powders.

## SPECIFICATIONS

	SEQUESTRENE				
	NA2	NA3	NA4	AA	A
Molecular weight	372	376	416	292	
SEQUESTRENE AA content	78.5	77.6	70.2	99	20
g. Ca <sup>++</sup> sequestered/100g.	10.5	10.5	9.6	13.5	2.6
pH aqueous solution	5.0	8.4	10.3	2.3	12.5
Solubility (26°C) gms. 100cc. water	11.1	57	103	0.03	

SEQUESTRENE is a non-colloidal organic chelating or complexing agent which resembles the polyphosphates in its ability to deionize heavy metal and alkali earth ions. SEQUESTRENE does not, however, hydrolyze in aqueous solution; it is stable and effective over a wide range of temperature and pH; it is compatible with cationic materials and soluble in many semi-aqueous and non-aqueous media. SEQUESTRENE is one of the most powerful de-ionizing agents known.

SEQUESTRENE may be thought of as a water soluble ion exchanger. It reacts with calcium ion, for example, as follows:



The water soluble calcium complex of SEQUESTRENE is so stable that oxalate will cause no precipitation in neutral or alkaline solution. SEQUESTRENE will dissolve metallic soaps. Its affinity for iron is such that it will prevent precipitation of iron hydroxide in the presence of sodium carbonate.

## APPLICATIONS

**SOAPS AND DETERGENTS . . .** as a clarifying agent and water softener for liquid potash soaps, tall oil soaps, liquid alkaline detergents to prevent clouding in glass containers or on dilution . . . to improve foaming and detergent action of high titre soaps, C16-C18 alcohol sulfates, etc., at low temperature and in hard water . . . in formulation of hard water toilet soap . . . to prevent rancidity and oxidation of sulfonated oils and soap, particularly for rug and upholstery shampoo use . . . in soaps and emulsifiers to counteract trace metal effects on polymerization rates and yields . . . to prevent precipitation of calcium and metal carbonates and silicates in alkali detergent solutions . . . in formulation of milk stone solvents, alkali paint strippers, heavy duty metal cleaners and polishes, laundry alkalies, rust removers.

### DISINFECTANTS AND SANITARY CHEMICALS . . .

in formulation of quaternary ammonium germicide solutions and detergent-sanitizers for hard water use . . . in caustic soda bottle washing compounds . . . in phenolic disinfectants of increased efficiency in soft water and better dispersibility in hard water.

### TOILET GOODS . . .

as a clarifier, foam builder and water softener in liquid soap shampoos . . .

clarifier for cuticle remover, sulfites, thioglycolates and other alkaline solutions . . . neutral type hair rinses . . . as an antioxidant for solubilized oils . . . in dentifrices to dissolve tartar deposits.

**METAL PROCESSING . . .** removal of soap films from metals . . . anodizing aluminum . . . bright plating of copper, zinc, nickel, cadmium, cobalt, brass . . . stabilizing metasilicate solutions . . . formulation of polishing, buffing, cleaning compounds.

**TEXTILE PROCESSING . . .** to prevent streaking, spotting, dulling, crocking, poor color yields and shade change in dyeing . . . in kier boiling and continuous scouring . . . in starch finishes to prevent dulling . . . in printing pastes to prevent livering . . . in bleaching to stabilize peroxide . . . in viscose spinning baths . . . stripping chromed and coppered dyings . . .

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**FOODS AND BEVERAGES . . .** clarifier for wine, vinegar . . . antioxidant and rancidity retardant . . . extraction of pectin . . . preventing discoloration and retarding deterioration of foods containing heavy metals . . . enzyme deactivator.

**RUBBER . . .** as a stabilizer for natural raw latex, to retard oxidation, excessive tackiness . . . in cold rubber polymerization as activator and iron scavenger . . .

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### PROBLEM...

To make fast-drying lacquers that would use less solvents and reduce overall finishing costs and time.

### SOLUTION...

Hot spray lacquers—based on a new balance of solvency and evaporation rates in the formulations. These lacquers when heated (between 132°—160°F.) are thin enough to spray, yet deposit thicker films of higher solids content.

# Look What's Happened

### RESULT...

Fast-drying, durable finishes that provide up to double the final film thickness with a single "pass" of the spray gun. Often, one coat of hot lacquer gives adequate coverage.

Many leading manufacturers of furniture and other wood and metal products are now using hot-spray lacquers. They find that hot lacquers give them all of cold lacquer's unique combination of properties—including fast-dry, ease of sanding and polishing, print resistance, and variety of finishing choices.

This development in nitrocellulose chemistry, in cooperation with the protective coatings industry, is typical of the way in which Hercules is seeking constantly to broaden the fields of application for its products. Other Hercules cellulose derivatives include cellulose acetate, ethyl cellulose, cellulose gum, and hydroxyethylcellulose. Hercules welcomes the opportunity of placing its long experience in cellulose chemistry at your disposal.

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#### Please Return Drums

While many Hercules products are at present in short supply, users can help themselves and the entire chemical industry by sending back promptly all returnable drums. Steel containers are in short supply, too.

One of our plants lost several days' production within a two-month period, simply because there weren't any drums available in which to pack and ship finished products.

Other companies are experiencing container shortages, too. Let's all of us return drums as quickly as possible, so that the flow of materials to industry will not be held up by this type of shortage that is so unnecessary.

Thank you for your cooperation.

#### New Surface-Active Agent

A new Hercules nonionic surface-active agent, B-48, is now available in commercial quantities. The new derivative is based on rosin and ethylene oxide, a polyoxyethylene ester of rosin. An amber colored viscous liquid, B-48 is completely soluble in water. It is an excellent detergent and emulsifying agent. B-48 is not affected by the presence of the heavy metal ions of hard water. The material is stable in both alkaline and acid media, and is compatible with anionic and cationic surface-active agents.

B-48 is recommended for low foaming alkaline formulations used in dish washing, bottle washing, metal cleaning, and automatic home laundry compounds. It is also recommended for use as an emulsifying agent in the preparation of emulsifiable concentrates and emulsions. Send for free testing sample.

#### Booklet on Adhesives

Just off the press is a brand new technical booklet entitled "Hercules Resins for Adhesives." Three broad adhesive types are covered and examples are cited in each category. In a general way, the examples mentioned in each category, rubber, cellulose, and water soluble, aid adhesive manufacturers in selecting the resin best suited for their specific requirements. The physical characteristics of Hercules resins in each of these classifications are fully described for film cohesion, surface tack, bond strength and any other useful properties. Additional examples are cited to provide adhesives formulators with an index to the wide variety of Hercules resins in a broad range of hardness types. Send for free copy of this new booklet.

GC51-3

**non-toxic, non-corrosive, non-volatile**

# **Gluconic Acid**

## **is the choice for acid detergents**

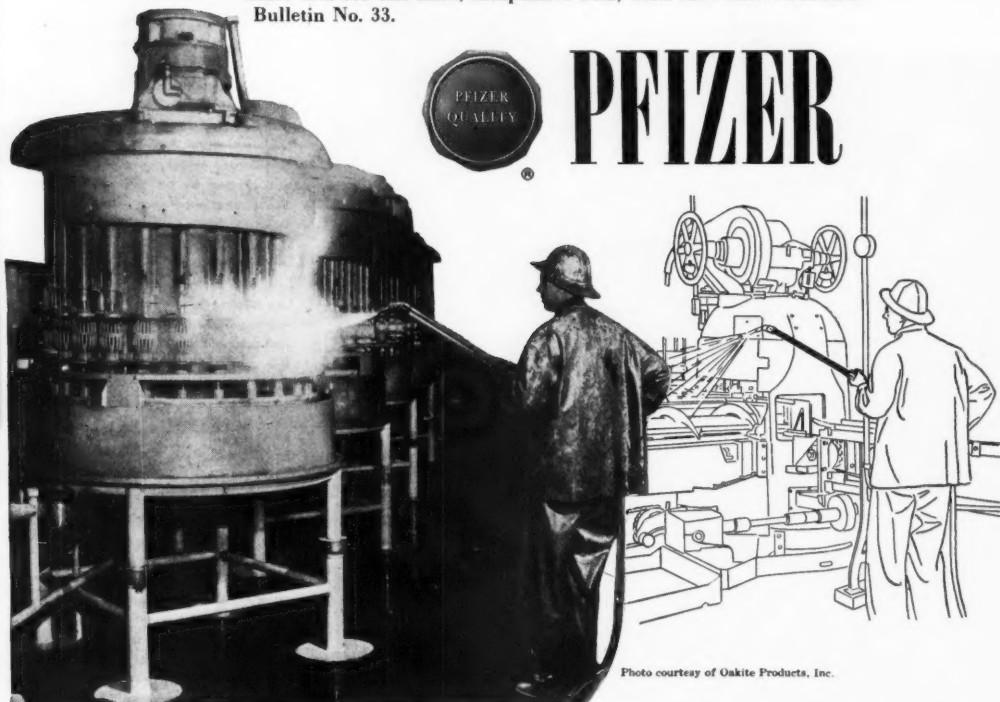
Acid detergents are gaining increasing acceptance for cleaning food and beverage containers and equipment because, by leaving surfaces in an acid condition, the amount of proteolytic bacteria is greatly reduced and the development of offensive odors is prevented.

Gluconic acid is the choice for these detergents because: 1.—It has an extremely low corrosion rate, (one-twentieth that of phosphoric acid on iron surfaces); 2.—It is non-toxic, as evidenced by its usage in food and pharmaceutical products, and 3.—It is non-volatile, a factor of importance where high temperatures may be expected.

Odorless solutions of gluconic acid are also being used successfully to prevent the development of milk-and beerstone formation, without affecting the product flavor. For complete descriptions of these and other uses for this mild, inexpensive acid, write for Pfizer Technical Bulletin No. 33.



# PFIZER

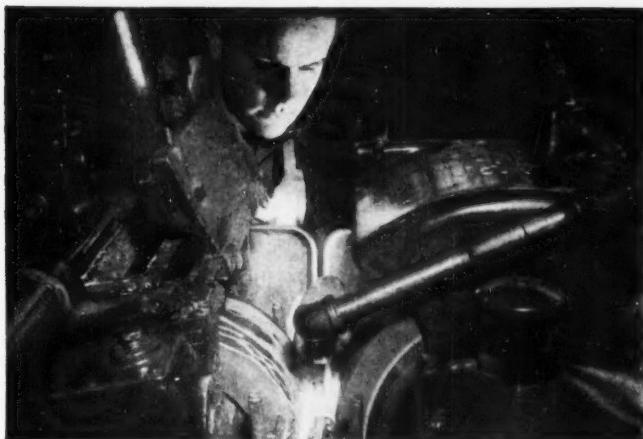


# GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • COPPER GLUCONATE • FERROUS GLUCONATE • MAGNESIUM GLUCONATE  
MANGANESE GLUCONATE • POTASSIUM GLUCONATE • SODIUM GLUCONATE

CHAS. PFIZER & CO., INC., 630 FLUSHING AVE., BROOKLYN 6, N. Y.; 425 NORTH MICHIGAN AVE., CHICAGO 11, ILL.; 605 THIRD ST., SAN FRANCISCO 7, CALIF.

# SPECIALTIES . . .



CUTTING OILS: Riding the metal working boom.

## Slicker, Cooler Cutting

Machine tools whrrrr to answer the country's call for metal equipment, but it's sweet music to cutting oil makers as their market hits a 60 million-gallon-a-year rate.

They're busy revamping formulations to cope with tougher metals and new machine tools.

"More, better and faster" is the order of the day as metal fabrication industries strive to meet the nation's defense requirements and to keep up a reasonable flow of civilian goods. That means new alloys with special structural properties; better machines for shaping these as well as older materials more rapidly; and improved cutting oils to permit functioning of cutting and grinding tools.

The potential market for these specialty fluids has been placed at 40-70 million gallons a year in the past. Today it is estimated that metal working establishments are hitting consumption of 60 million gallons annually.

Cutting fluids in machining operations have two functions: to dissipate the heat produced as the tool bites into the stock; and to lubricate, thus reducing friction between the tool and the chip being removed from the stock. In so doing, they prolong the life of the tool, insure machined parts with satisfactory surface finishes, and boost production.

Formulations have evolved from simple mineral, animal and vegetable oils, to complex mixtures of compounds designed to withstand the

hard service of modern, high-speed machines with hard cutting tools. These fluids are of two general types: cutting, or straight, oils; and soluble oils (actually emulsions).

**EP Additives:** For light machining jobs, straight mineral oil is satisfactory; but for somewhat more severe conditions, a mineral-lard oil blend is used, since lard oil has good wetting and lubricating properties. Lard oil, however, is objectionable in that it oxidizes, gumming up a machine, and easily turns rancid, causing foul odors and promoting growth of dermatitis-causing bacteria.

To overcome the objections of lard oil, and to meet the need for fluids of high film strength, "extreme pressure" additives have been incorporated into cutting oils over the years. The most common ones are sulfur and chlorine, although phosphorous finds some use. Those containing sulfur are referred to as "active", since they discolor copper at room temperature.

While the components of such oils are known in a general way, actual amounts and conditions of pressure and temperature under which "EP" additives are combined with mineral

oils or mineral lard oils are closely held trade secrets. Some highly sulfurized oils on the market may contain as much as 14% fatty oil additives, while others used for the same type of job will contain only 2%. The difference lies in processing conditions and, in the case of the latter, use of synthetic polar additives.

**Souble Oils:** Where a machining operation requires cooling action more than lubrication, so-called soluble oils are used. These aqueous emulsions depend on water, an ideal coolant, to dissipate the heat. For grinding, low surface tension is required so that the grinding dirt will drop out readily and not be recirculated in the emulsion to mar the finish or bind the cutting wheel.

Here water hardness must be considered, for if an emulsion base is formulated for very hard water, in softer water, the additional surface-active ingredient may cause foaming and keep the dirt suspended. Separate formulations for both conditions solve the problem.

Souble oils used for cutting, however, should have more body. Here the emulsion need be formulated only for stability in the hardest water with which it will be used; if it foams in softer water, it creates no problem since the heavy chips drop out readily. Heavy-duty soluble oils may contain active sulfur, combining its extreme pressure characteristics with the good cooling action of the emulsion.

Petroleum sulfonates are the principal emulsifiers used in these products, but sodium and potassium rosin soaps, amine soaps of rosin acids and fatty acids are also employed. Rust inhibitors, germicides, foam depressants and additives for freeze-thaw stability are other ingredients.

**Changing Needs:** Requirements of defense and civilian life are causing modifications in formulations. Some examples: Heat-resistant steel in jet planes needs an oil with more compound in it. Titanium parts in planes call for different types of oil. Radio parts, previously stamped, are made of new alloys that must be machined. TV antenna boom means lubricants for drawing aluminum rods.

As to types of oils, the market is currently divided between cutting and soluble oils. Of cutting oils, a small per cent (about 10%) is mineral lard oils, with the rest divided between the active and non-active types. The big advantage in using soluble oils is that they are cleaner, and the trend is in that direction.

*Now available to industry!*

## ACROLEIN

$$\text{CH}_2=\text{CHCHO}$$

**FOR:**

**Pharmaceuticals**—methionine, 2-amino-pyrimidine, folic acid, and substituted quinolines.

**Odorants**—by Diels-Alder condensations.

**Cooling Resins**—reaction with urea, thiourea, and polyhydric compounds.

56.06 . . . . .	Molecular Weight .....	70.09
0.8427 . . . . .	Specific Gravity at 20/20°C. ....	0.8474
52.6°C. . . . .	Boiling Point at 760 mm. Hg. ....	68.0°C.
215 mm. . . . .	Vapor Pressure at 20°C. ....	120 mm.
<0°F. . . . .	Flash Point (Cleveland open cup). ....	5°F.
20.8% by wt. . . . .	Solubility in Water at 20°C. ....	5.9% by wt.
6.8% by wt. . . . .	Solubility of Water in at 20°C. ....	1.7% by wt.

## METHACROLEIN

$$\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2=\text{CCHO} \end{array}$$

**FOR:**

**Copolymers**—with acrylonitrile, acrylic esters, and styrene—they have high softening points and good solvent resistance.

**Resins**—for impregnated fabrics, linoleum, and adhesives.

ACROLEIN and METHACROLEIN are highly reactive intermediates. They undergo reactions characteristic of both unsaturated compounds and aldehydes. The conjugation that exists between the double bond and the unsaturation of the carbonyl group increases the reactivity of both groups. These groups can be made to react either simultaneously or individually—the ethylenic groups with halogens, halogen acids, 1,3 dienes, alcohols, and mercaptans—the aldehyde groups with anhydrides and dibasic organic acids, Grignard reagents, alcohols, and HCN. Acrolein and methacrolein are shipped containing 0.1 per cent hydroquinone to inhibit polymerization.

For further information on either of these materials call or write the nearest Carbide and Carbon Chemicals office today. Ask for the technical bulletins "Acrolein" (F-7389) and "Methacrolein" (F-7620). These bulletins will provide you with additional data on the physical and chemical properties of acrolein and methacrolein. They will also serve as a permanent reference for your work.

## CARBIDE AND CARBON CHEMICALS COMPANY

A Division of  
**Union Carbide and Carbon Corporation**  
38 East 42nd Street U.S.C. New York 17, N.Y.

Offices in Principal Cities  
In Canada:  
Carbide and Carbon Chemicals, Limited, Toronto

## SPECIALTIES . . .

### Tailored To a Building Trend

A. S. Harrison Co., maker of Preen, extends its clean-while-you-wax polish business with Preenet, a new finish for asphalt and rubber tile. The company claims the product puts an end to scrubbing after one preliminary cleaning, and it also has developed a companion cleaner to do the initial job.

With Preenet, the new emulsion cleaner and wax for asphalt and rubber tile, A. S. Harrison Co. is moving into a market that its original combination floor cleaner and polish, Preen, can't touch. For the latter contains solvents which damage these special surfaces, but the new product is solvent-free.

It comes along at a time when the market for cleaners and waxes for asphalt and rubber tile floors is expanding, too. The large number of houses built on concrete slabs—with asphalt tile replacing traditional wood as flooring—is a striking feature of post-war building, and one that has been of growing concern to A. S. Harrison, president of the company and originator of Preen (*CI, Jan. 1948, p. 45*).

Here were whole communities of this type of home springing up in his marketing area\*, and the bulk of wax purchases was for the "no rub" wax emulsions of giants like Johnson, Simoniz and Boyle Midway. Harrison knew from his success with Preen that women would buy a product that eliminated the need for cleaning a floor before waxing it, was certain he could develop a combination cleaner-polish without solvents. Six months ago, he came up with a formulation he liked, and he christened it Preenet.

**Proving Ground:** Fittingly enough, Levittown, on Long Island, where the greatest concentration of asphalt tile-floored houses in the country is found, was selected for the initial survey. Response from sampling was enthusiastic, so this was followed by test marketing in 50 Long Island stores. The results were equally encouraging, and last month Preenet made its formal debut in G. Fox in Hartford (where Preen was first sold). This week, consumers throughout the rest of Harrison's sales zones are reading about it in ads in local papers and hearing it plugged over the air.

The company recommends a good

\* Harrison allows Preen to go only where he feels he can support the product with advertising, will do likewise with Preenet. This area now extends from his Connecticut home base throughout New England, as far west as Chicago and as far south as South Carolina.



**A. S. HARRISON:** Basementless houses bothered him.

preliminary cleaning of the surface before applying Preenet, and has developed Preenet Cleaner, a liquid concentrate for floors that have been badly neglected. Preenet is then put on and buffed (it is not a "no rub"). Thereafter, according to Harrison, the floors need never be scrubbed again, but just treated with Preenet alone. Not only that, but since the wax is long lasting, it may give six months' service with occasional buffing.

Preenet comes in quarts and gallons, fair traded at \$1.09 and \$3.24, respectively. The cleaner is packaged only in quarts, costs 98¢.

### Menace to Mites

There's nothing but trouble ahead for mites. Last month Stauffer Chemical introduced its Sulphenone in the West (*CIW, April 28, 1951*). And now Naugatuck chemical division of U.S. Rubber is making its new miticide, Aramite\*, available to commercial growers for the first time this year.

Tests by various agricultural experiment stations throughout the country have shown the new chemical to be effective against a variety of mites. Among those controlled: citrus red mites on oranges, grapefruit and lemons; European red mites on apples; alfalfa and clover mites; and mites on cotton, peaches, almonds, walnuts, nursery stock and a variety of shade trees. Good control of chicken mites and chiggers has also been achieved

\* Chemically, 2-(p-tert-butylphenoxy) isopropyl 2-chloroethyl sulfite.

in tests where chicken houses and surroundings have been sprayed with the chemical.

Aramite is being sold as a wettable powder with recommended dosages of  $\frac{1}{2}$  lb. per 100 gal. of water, depending upon how it is applied. Application can be made by spray duster, hand sprayer, speed sprayer, boom applicator or helicopter, the latter having proved particularly successful in California tests against citrus mites last season. The material is compatible with a variety of insecticidal and fungicidal chemicals, but not with bordeaux mixture or lime. Animals have exhibited no harmful effects from it in acute toxicity tests.

### Container Edict

Four designs for drug and chemical product bottles are among the 42 simplified designs for glass containers just established by the National Production Authority. NPA's order (Schedule 1 to Order M-51) means that glass container makers and users cannot adopt new designs and should switch over to the simplified designs.

The four drug and chemical containers include the Boston round bottle (in 18 sizes from  $\frac{1}{2}$  ounce to 1 gallon); the oval blake bottle (in 30 sizes from  $\frac{1}{4}$  ounce to 1 quart); the round hydrogen peroxide bottle (8 and 16 ounce only); and the round, screw-cap, drug and chemical packer (in 28 sizes from 2 to 4,000 cc.).

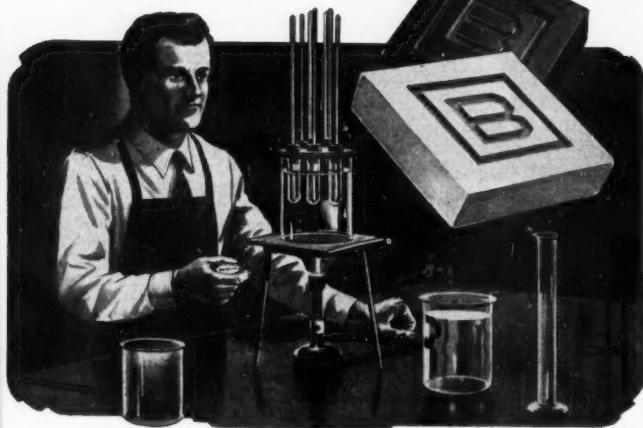
Should it become necessary, NPA may require the packaging of specified products in the simplified glass containers. A conversion period will be provided, however, if such end-use restrictions are ordered.

Purpose of the simplified designs is to conserve critical materials.

**Rust Aloyer:** Selenium is the key to the action of a new primer, R-10-X, designed to permit painting over rusted surfaces. Chemical reaction with the ferric oxide results in a neutral, insoluble, complex iron chrome selenide impervious to moisture and a good primer base for paint. It is manufactured by Thomson-Long Co. (Palatine, Ill.), is nonflammable, very low in surface tension, and has high coverage and penetration properties.

Heavy rust scale, grease, and oil must be removed with steel wool or a wire brush. R-10-X is then applied by brush, spray, or dip, and as soon as it dries the surface may be painted. Applications are suggested for screens, automobiles, tools, pipes, agricultural equipment, etc.

# Prove B Waxes IN YOUR OWN LAB...



... YOUR TEST IS BEST ...

## Properties

"Properties"—is a nice sounding word, but when you're talking about micro-crystalline waxes it simply doesn't mean much. The dividing lines between various types of micro-waxes are so hazy that efforts to scientifically classify them simply haven't been too successful. That is why Bareco continually urges you to **write for samples** of their performance-proven waxes. If you were to receive a personal letter from one of Bareco's chemists, this is probably the way it would read, "Dear Mr. Industry: We produce top grade microcrystalline waxes, but we don't know all of your problems. Why not consult with us, as so many others have done, to determine how our waxes can be used in your processes. You may never realize how they can help unless you take samples of our product and test them in your own laboratory. We will send samples for your investigation. If technical assistance is needed we will be glad to help." Bareco waxes **MAY** save you a lot of money . . . Bareco waxes **MAY** put you on the road to a better product . . . why don't you **find out** by writing for samples today. In the meantime, here's food for thought—

**Very low water transmission rates.**

**Chemically Inert.**

**Free of objectionable odors.** Excellent heat sealing characteristics.

**Supplied in a wide range of melting points, color, and hardness.**

**WRITE FOR "THE WAX STORY", A NEW PAMPHLET SERIES**

## BARECO OIL COMPANY

Dept. F — Box 2009  
TULSA, OKLAHOMA

Dept. F — 121 S. Broad St.  
PHILADELPHIA, PA.

## SPECIALTIES . . .

**Soil Solubilizers:** Now in semi-commercial production and undergoing field tests are Pennsylvania Salt Mfg. Co.'s four new cleaning compounds said to be based on a unique "soil solubilizing" cleaning principle (*CIW Newsletter*, Feb. 10, 1951). These liquids are designated SC-3, SC-21, SC-23 and SC-24, appear to be especially useful in industrial applications where hard-to-remove soils (buffing compounds, greases, pigmented drawing compounds, etc.) are a problem. Other products of this type are under development.

**Plastone Revamps:** A new product, Chrome Aid, has been added to the recently siliconized line of Plastone Products Co., Chicago, automotive specialty manufacturer. Cognizant of the new sell in polishes, it has revamped its entire line and added the new item.

Chrome Aid is an emulsion containing, among other ingredients, carnauba wax, plastic resins, and silicone oils. Nearly neutral and not requiring supplementary steel wooling, it is said to restore high luster to long-neglected chrome and stainless steel and residually protect it. The product is being pushed in the Midwest and will shortly go national at 75¢ per 8-oz. glass bottle.

Plastone Auto Polish is a siliconized, plastic-carnauba formulation for application to a washed vehicle. After drying, the coating easily polishes to a high luster giving six months protection. The pint can retails at \$1.

A third product, Opal Silicone Creme Furniture Polish, rounds out the line.

**Possible Relocation:** General Paint Co. may transfer its present paint and varnish plant in San Francisco to San Leandro, Cal., an East Bay locality south of Oakland. A ten-acre site is available to the company, and it is analyzing the various factors involved in such a move. The change would provide room for future expansion.

**Barr Expansion:** George Barr and Co., Chicago manufacturer of insecticides, toilet articles and aerosols, has leased 60,000 sq ft in a building in that city. Twenty-five employees will be added to its staff.

### PICTURES IN THIS ISSUE:

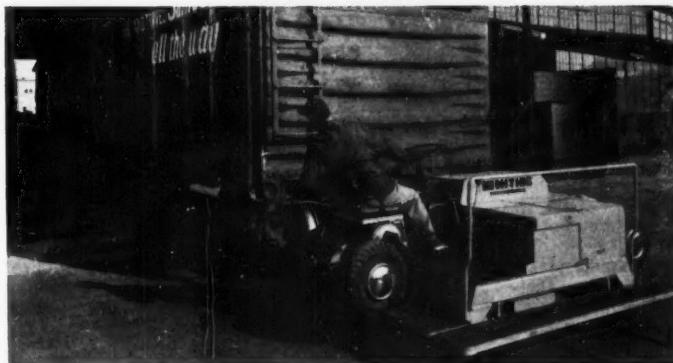
Cover (top)—Tennessee Valley Authority;  
Cover (bottom)—Stanolind Oil & Gas Co.; p. 14—Lynn Crawford; p. 39—Wide World.

# SHIPPING . . .



**ON RUBBER TIRES** the new Trackmobile (Whiting Corp.) is driven to a position astride the railroad spur on which it will work as a yard engine when the rubber-tired wheels are retracted and the coupling is made to the freight "train."

**ON STEEL WHEELS** the 3 ton Trackmobile becomes a puller (or pusher) with a drawbar pull that makes it the equivalent of a 115 ton locomotive. In 30 seconds the transformation from "tire-borne" to "track-borne" has taken place.



CHANGEOVER COMPLETED, the job of jockeying freight cars begins.

## Hybrid Jeep: Pocket Locomotive

A new answer to the old problem of maneuvering freight cars around rail spurs in production areas is getting a lot of attention from chemical executives this week. The answer is in the form of an ingenious hybrid between a jeep and a railroad switching engine.

The unit, (price \$8000) known as the Trackmobile and manufactured by the

Whiting Corporation, is equipped with two sets of wheels that can be used interchangeably on roads or rails (see above). The power plant of the unit is a 60 HP standard jeep engine.

A brilliant future is predicted for the mighty midget. Over 600 inquiries have been received by the manufacturers . . . many of them from chemical companies.

## LITHIUM FORMS Pioneered by METALLOY...



To Aid Industry, Metalloy Has Pioneered the Manufacture of Lithium in These Forms:

### Lithium Metal

Cube . . . 1/3 lb. Shot . . . 4-8 Mesh  
Extracted Rod . . .  $\frac{1}{2}$ " &  $\frac{3}{4}$ " Dia. Ribbon . . . 1/8"  
Wire . . .  $\frac{1}{4}$ " Dia. Cartridge (Enclosed in Copper Tubing) . . . 2.25"  
4.50, 9.0 & 18.0 Gram

### Lithium Hydride

### Lithium Amide

### Fine Ground Crystalline

SPECIALISTS, Metalloy has developed special forms of Lithium and Lithium Compounds for many specific applications. Check this list of over expanding Lithium Salts, exclusive with Metalloy:

### LITHIUM

Aluminosilicate • Cobaltite • Manganite • Silicate Titanate • Zirconate • Strontium • Silicate Alum • A CONTRIBUTION TO ORGANIC RESEARCH. Metalloy has developed special forms of Lithium and Lithium Compounds for many specific applications. Check this list of over expanding Lithium Salts, exclusive with Metalloy.

Let Metalloy and Lithium go to work for you today. Write Dept. A for specific data on any of the above.

IF IT'S LITHIUM — IT'S METALLOY

**METALLOY CORPORATION**  
TOWER 3000, MINNEAPOLIS, MINN.

Go the scientific way...go **MGK**

Insecticide Concentrates for

**AEROSOLS**

**DUSTS**

**SPRAYS**

We offer complete formulas . . . ready to put right into your aerosol bombs or your retail packages or . . . combinations of insecticides and synergists that leave you only the minimum of processing to do or . . . the purest toxicants and synergists in their primary forms. MGK has the best of whatever you want.



Scarabaeus

Scarab beetle

Model for Egyptian carved stone amulets and scarabs.

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# FULTON MULTIWALLS

must  
be  
good\*



\*must be good ... because of the ever increasing number of users favoring us with larger and larger orders for Fulton Multiwall Paper Bags.

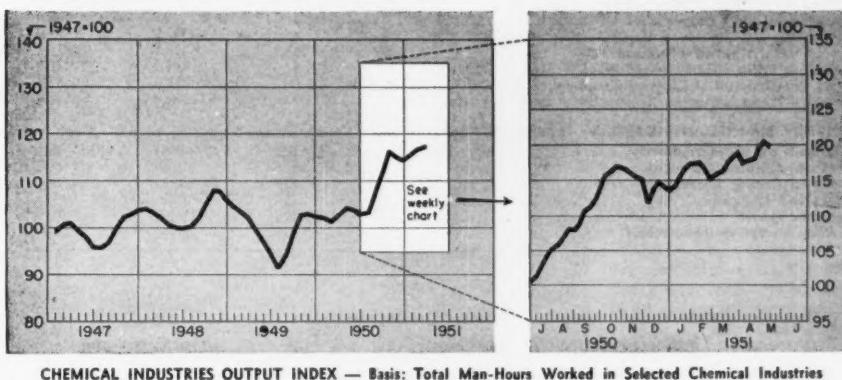
\*must be good ... because constant vigilance and inspection insure good workmanship, and uniform high quality which have won many new friends, and are winning more. In any size — all types, pasted or sewn bottom, open mouth or valve — Fulton makes "YOUR STYLE MULTIWALL." Call on Fulton for your next order of Multiwalls.



*Fulton* BAG & COTTON MILLS

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# CHEMICAL MARKETS . . .



Bright spot in the lower chemical tariffs resulting from the Torquay agreements: U.S. producers won't encounter any significant amount of price-cutting the way the market is today. Demand for most intermediates is well ahead of supply, and European manufacturers are not prone to lower prices under these conditions. If signs of a buyer's market should appear, many producers in the chemical industry will be active in seeking restoration of higher tariffs.

Imports of a number of inorganic chemicals have declined lately as domestic production began to whittle away the backlog. Soda ash and sal ammoniac, co-products of the Solvay process, are in better position. Sodium nitrite and disodium phosphate shipments have also been less frequent as more supplies have become available from domestic sources.

Evidence of transient supply abundance still keeps popping up from time to time. With inventories of some intermediates and plastics beginning to rise, producers are watching the market more closely. There was a slight but definite decline in February output for inorganic chemicals, organic intermediates and plastics materials.

Biggest slide recently was registered by vinyl plastics, production dropping from 34.4 million pounds in January to 30.8 million pounds in February, with sales corresponding almost exactly.

Tall oil supplies are still short but improving; one jobber in the New York area is 10 cars short this month, 20 cars better off than the month before. Pine oil is quoted around \$1.05 a gallon by the major producers, with resale prices ranging up to \$1.60 this week.

To meet competition from synthetic butanol, the fermentation product was reduced this week by 7¢ a pound to 28¢. This move had been expected for some time, and will have the added effect of increasing supplies of acetone, co-product of the fermentation. The paint and varnish industry will benefit also by the simultaneous price reduction on butyl acetate to 28¢ a pound.

## MARKET LETTER

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

	Latest	Week	Preceding	Week	Year	Ago
Chemical Industries Output Index (1947=100) .....	120.1			119.9		103.6
Bituminous Coal Production (Daily Average, 1000 Tons) .....	1,612.0			1,743.0		1,831.0
Steel Ingot Production (Thousand Tons) .....	2,077.0			2,073.0		1,931.0
Wholesale Prices—Chemicals and Allied Products (1926=100) .....	144.4			143.9		116.9
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.) .....	246.4			238.5		187.1
Chemical Process Industries Construction Awards (Eng. News-Record) .....	\$1,023,000			\$22,934,000		\$2,197,000

### MONTHLY BUSINESS INDICATORS—HOURLY WAGES

	Latest	Month	Preceding	Month	Year	Ago
Chemicals and Allied Products .....	\$ 1.607			\$ 1.595		\$ 1.458
Industrial Inorganic Chemicals .....	1.776			1.776		1.596
Industrial Organic Chemicals .....	1.723			1.713		1.564
Drugs and Medicines .....	1.533			1.528		1.427
Synthetic Rubber .....	1.876			1.856		1.697
Plastics (except synthetic rubber) .....	1.696			1.684		1.512

Under pressure by increasing organic chemical imports from Europe, a downward price drift has been noted for urea and trichlorethylene in the last few weeks. Respective current resale prices are 12½¢ and 15¢ a pound.

South American requirements are a strong prop in maintaining heavy demand for caustic soda and soda ash. Nevertheless, solid caustic at 9½¢ and soda ash at 3¼¢ are about 1½¢ below levels of last month.

Perspective on the chemical market: CIW output index has levelled off at 120 (1947=100). Wholesale price averages still tend slightly downward as supply and demand approach better balance.

Plenty of chemicals maintain a hard-to-get-status. Resale prices of some prominent examples:

Citric acid	60-65¢
Phenol, USP	60
Chromic acid	50-54

Sellers of phthalic anhydride are asking 70-75¢ a pound, and buyers have been trying to get some at 60-66¢.

Sole producer of synthetic glycerine, Shell Chemical, this week boosted prices in drums a hefty 11¢ a pound, in carloads or l.c.l., while maintaining tankcar prices unchanged.

Below-average turpentine stocks and active inquiry from the paint industry caused prices to recoup 3¢ from last week's plunge of 16¢ a gallon, while industry awaits new OPS ceilings.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending May 14, 1951

	Change	New Price		Change	New Price
Casein, imp., acid-ppt. ....	\$.005	\$.40	Lemon Oil, Calif. ....	\$.50	\$ 4.50
Egg Albumen, edible .....	.04	2.11	P-dichlorobenzene .....	.005	.235
Lanolin, USP .....	.05	.35	Glycerine, synthetic, drums, c.l. ....	.1075	.5425
<b>DOWN</b>					
Butyl Acetate .....	.07	.28	Oiticica Oil .....	.005	.315
Butyl Alcohol .....	.07	.28	Soybean Oil, crude, tanks .....	.0025	.20
Castor beans, fob, Brazil .....	15.00	285.00	Spearmint Oil .....	.05	5.75
Caustic Soda, solid .....	.005	.095	Stearic Acid, single-pressed .....	.005	.235
Coconut Oil, crude, tanks, Pac. ....	.005	.17	Turpentine, gal. ....	.15	.77
Copra, Pac. cif., ton .....	7.50	220.00	Tin metal, Grade A .....	.03	1.39
Linseed Oil, raw, tankcar .....	.005	.225	Urea .....	.005	.125

All prices per lb. unless quantity is stated



TAPPING PINE TREES: More hands are needed.

## Naval Stores Seek OPS Aid

Outlook for stepping up naval stores production is dimmed by manpower shortages in Southern industry.

Producers seek price incentive from OPS to solve labor problems, boost output of turpentine and rosin.

Most probable outcome of current impasse: Turpentine will stay below ceiling, rosin is slated for rise.

A sudden break in turpentine price this week ended the four-month stalemate in naval stores prices, an aftermath of the January OPS ceilings. Since that time a quiet resistance campaign had been carried on by consumers to seek a satisfactory meeting ground for a normal volume of business.

Crux of the matter is that the paint industry just doesn't want to pay 90¢ a gallon for turpentine, and looks more intently for petroleum hydrocarbons to fill its requirements when turpentine prices begin to climb. This determined resistance, backed up by the fact that alternate materials can often be used, caused some producers of naval stores to capitulate by dropping the price to the 75-77¢ a gallon bracket.

This supply situation does not apply to rosin, which quantitatively comprises most of the naval stores output. (An average barrel contains about 11 gallons of turpentine and nearly 300 pounds of rosin.) Rosin at the prevailing price of around \$9 a pound is still in a comparatively strong market position in paper sizing, surface coatings, and laundry soap.

Producers by now are more or less

reconciled to the idea of lower turpentine prices, although with the current paint season approaching and aromatic hydrocarbons short, an 80-85¢ a gallon price may well be a more probable stabilized figure.

But producers feeling entitled to a higher-than-OPS valuation are trying to get something like a \$1 a cwt. more for rosin. In this attempt, several factors are on their side: Demand for rosin is high, both here and abroad, stocks are low, and it becomes increasingly difficult to maintain or recruit enough production labor to meet the demand. The Office of International Trade has already placed naval stores on the positive list because of domestic needs. There is a strong probability that OPS, under the weight of these facts, will grant rosin 50¢ to \$1.00 a cwt. more than the existing ceiling allows.

**Price-wise:** In the past the price of naval stores has fluctuated widely in an unpredictable manner. When demand was low, production was high because of more available workers. When demand is high, as in today's market, supplies drop as more workers leave the piney woods. For the last thirteen years the Commodity Credit

Corporation has helped to even out these price gyrations, but today CCC's rosin stocks are less than a 3 months' supply, based on domestic needs, and turpentine stocks are less than a month's supply.

The support level for crude pine gum produced in 1951 has been set at 90% of parity as of April 1 compared with 60% the season before. This move will stabilize the market in case of reduced demand—an unlikely event under present conditions. (This valuation was equivalent to 73% of the market price on that date.) For the conventional naval stores unit of 50 gallons of turpentine and 1,400 pounds of rosin, the support level was established at 128.21, with individual adjustment possible for each commodity while maintaining this floor.

**Putting Out:** Despite these encouragements, the output of gum turpentine and gum rosin is not expected to be substantially higher than for last season. More industry is moving into the Southeast, and the huge atomic energy program there will make the labor supply even more precarious—easily wooed away by the possibility of higher wages.

In the past few years, increasing supplies of naval stores have been obtained from steam and destructive distillation of stumps to yield wood rosin and wood turpentine. Wood rosin has surpassed gum rosin in production, and about 10% more is expected for the coming season. Wood turpentine production has also increased to the same extent, and supplies have been further replenished by a substantial amount coming from the sulfate paper process as a by-product along with tall oil.

**Prospects:** There is little doubt that expansion of the naval stores industry is dependent on the availability of labor and the possibility of increased production. The labor problem is closely associated with what the producer can afford to pay in competition with the expanding industrial economy in the Southeastern U. S. In order to maintain the needed supplies of naval stores, the OPS will most likely raise the existing ceiling soon.

The ultimate result, CIW believes, will be an increase in rosin prices. Turpentine should find its price niche somewhere in the 80-85¢ a gallon range, and rosin somewhere between \$9-\$10 a pound. At these prices, producers will find operations more worthwhile, and consumers can meet their requirements with less hunting for supplies.

## CHEMICAL MARKETS . . .

### European Drugs Gain

Signs of the recovery of the European drug industry are apparent in the survey just completed by the Economic Cooperation Administration. Most of these countries are still not self-sufficient and will continue to require U.S. drugs in the next few years, but as the leaders begin to export, some of the customers become competitors.

Of the countries in Western Europe, Germany has shown the most rapid recovery. In fact, exports of medicinals tripled in 1950 over the preceding year, and it seems probable that she will move in more strongly into

European and other foreign markets. England is also producing more antibiotics than for the market at home, and has received almost no medicinals in the ECA program. However, \$1.3 million was guaranteed to E. R. Squibb and to Parke, Davis & Co. for manufacturing facilities in British plants.

France and the Netherlands are practically self-sustaining in antibiotics. Italy is expected to produce enough for her own needs by 1952, although a critical shortage exists today. Greece is in the least self-sufficient position for penicillin and streptomycin, although a start has been made in sulfa drug manufacture.

## GOVERNMENT NEEDS

Bids Close	Inv. No.	Quantity	Item
General Service Administration, 219 S. Clark St., Chicago 4:			
May 17	CH-28997	160 cans	water emulsion wax
Navy Purchasing Office, 111 E. 16th St., N.Y.:			
May 14	8769	30,000 lbs.	ammonium chloride
May 21	8768	15,000 lbs.	sodium resinate powder
May 22	8780	2,200 lbs.	sodium perborate
May 16	8788	8,785 gals.	tetrachloroethylene
May 22	8778	26,000 gals.	trichlorethylene
May 16	8782	10,000 gals.	ethylene oxide
May 21	8770	100,000 lbs.	hydrochloric acid
May 23	8793	30,000 lbs.	laundry soap
May 15	8793	1,152 bott.	stock soap solution
Aviation Supply Office, 700 Robbins Ave., Philadelphia:			
May 17	B-54058	\$20,000 lbs.	pigment (dry aluminum stearate)
May 16	B-54047	7,590 gals.	primer
General Services Administration, Region 3, Washington 25, D.C.:			
May 16	99665-R/3	64,000 lbs.	caustic soda (lye concentrate)
May 16	99667-R/3	17,400 lbs.	scouring powder
May 16	99668-R/3	3,000 lbs.	bora compound soap
May 16	99669-R/3	25,900 lbs.	toilet soap (powder)
Commandant of the Marine Corps, Washington 25, D.C.:			
May 23	1602	3,200,000 lbs.	dishwashing compound
General Services Administration, 1114 Commerce St., Dallas, Tex.:			
May 15	FW-13877	720 each	fire extinguisher liquid

## GOVERNMENT AWARDS\*

Item	Supplier	Location
Chemical Procurement Agency, Chemical Center, Md.:		
activated desiccant	The Davison Chemical Corp. Eagle Chemical Co., Inc. Filtrol Corp.	Baltimore, Md. Joliet, Ill. Los Angeles, Cal.
Navy Purchasing Office, San Francisco 5, Cal.:		
alkyd resin solution	Reichhold Chemicals, Inc.	San Francisco, Calif.
Armed Services Petroleum Purchasing Agency, Washington 25:		
compound	Nox-Rust Chemical Corp. Pennsylvania Refining Co. E. F. Houghton & Co.	Chicago, Ill. Butler, Pa. Philadelphia, Pa.
N.Y. Quartermaster Procurement Agency, 111 E. 16 St., New York 3, N.Y.:		
laundry soap (chip, high titer)	Tennessee Co. Stahl Soap Co. Gilliam Soap Co.	Memphis, Tenn. Brooklyn, N.Y. Fort Worth, Tex.
Bureau of Ordnance, Washington 25, D.C.:		
injection molded ethyl cellulose plastic inhibitors	Peat Mfg. Co.	Downey, Cal.
Navy Purchasing Office, New York, N.Y.:		
all purpose salt water	Armour & Co.	New York, N.Y.
avocado oil		
hydraulic gear oil	Esso Standard Oil Co.	New York, N.Y.
synthetic matting	U.S. Rubber Co.	New York, N.Y.
desiccant	Poroel Corp.	Philadelphia, Pa.
phosphoric acid	Cole Labs, Inc.	New York, N.Y.
Navy Dept. Aviation Supply Office, Philadelphia 11, Pa.:		
zinc oxide pigment	Varcraft Works, Inc.	Pottstown, Pa.
nonmercurial fungicide	Mass & Waldstein	Newark, N.J.
lacquer shellac, orange, Type I	Woodfinishing Products Co.	New York, N.Y.
zinc chromate primer paint	Andrew Brown	Los Angeles, Cal.
exterior enamel, glyceryl phthalate	National Lead Co. William Smith Co. Dixie Paint & Varnish Co.	Philadelphia, Pa. East Point, Ga. Baltimore, Md.
turpentine, Type I	Baltimore Paint & Color Works Western Associates, Inc.	San Carlos, Cal.

\* Security regulations prevent disclosure of quantity and dollar volume.

## BOOKS . . .

**The Chemistry and Action of Insecticides**, by Harold H. Shepard. McGraw-Hill Book Co., New York, N. Y.; vii+504 pp., \$7.

In covering the subject of insecticides, this reference-text concentrates on the more essential facts and theories relating to insecticides and their properties. While the author is not too interested in discussing the details of insect control, he does deal with historical and commercial background of insecticides as well as the chemical, physical and toxicological aspects. Material is arranged according to chemical relationships rather than on the basis of the type of effect particular insecticides have upon insects.

**An Introduction to Textile Finishing**, by J. T. Marsh. John Wiley & Sons, Inc., New York, N.Y.; xv+552 pp., \$5.50.

A companion volume to "An Introduction to Textile Bleaching," this book deals with the chemical aspects of textile finishing, placing particular emphasis on recent investigations and discoveries in the field. In the light of up-to-date knowledge concerning the chemical composition and molecular structure of textile fibers, the author covers the entire field of finishing, keeping in mind the commercial importance or technical interest of an individual finish.

**The Merck Manual**, Merck & Co., Inc., Rahway, N.J.; 1600 pp., \$4.50, regular edition; \$5., thumb-index edition.

Intended for physicians, pharmacists, chemists, dentists and nurses, this medical volume deals with everyday problems of diagnosis and treatment. In every case studied, symptoms of the condition are noted, salient points to observe are stressed and specific recommendations for treatment are set forth.

## Briefly Listed

**THE RADIATION LABORATORY SERIES**, a technical series started in 1947 under the sponsorship of the U.S. Office of Scientific Research and Development, has been recently completed. A compendium of basic information on radar and modern electronics, this series contains in report form the results of five years of research on radar at the Radiation Laboratory of the Massachusetts Institute of Technology. Published by the McGraw-Hill Book Co., 330 West 42 St., New York, N.Y.

**EMPLOYEE FEEDING**, by John W. Stokes, 92 page manual intended to be of service to both top executives and cafeteria managers, covers policies and procedures for setting up and operating an efficient employee feeding facility as applied to in-

dustrial plants, banks and other institutions. Published by Edmund S. Whitten, Inc., 216 Tremont St., Boston 16, Mass., priced at \$3 per copy.

THE CATALYTIC DEHYDROGENATION OF BUTANES, by E. W. Howard, 44-p. bulletin (No. 29) published by the University of Illinois, covers catalytic dehydrogenation, a chemical process which is becoming increasingly important as a commercial means for synthesizing special types of hydrocarbons; various sections are devoted to types of catalysts used, yields and process design and control. The Engineering Experiment Station, University of Illinois; Price: 50¢.

THE PRACTICAL ENGINEER, POCKETBOOK, 1951, edited by N. P. W. Moore, furnishes technical information and data on every aspect of practical engineering, contains engineering dictionaries in German, French and Spanish. From the Pitman Publishing Corp., 2 West 45 St., New York, N.Y., for \$3.

CHEMICAL SAFETY DATA SHEET SD-39, HYDROCHLORIC ACID AND HYDROGEN CHLORIDE, 28-p. manual, one of series providing essential information on the safe use and handling of hazardous chemicals; explains physical, chemical and dangerous properties of hydrochloric acid so as to make understandable necessary precautionary measures. May be purchased from the Manufacturing Chemists' Association, Inc., 246 Woodward Bldg., Washington 5, D.C., at 35¢ a copy.

## MEETINGS . . .

Natl. Sales Executives, annual meeting, Waldorf-Astoria Hotel, New York, N.Y., May 31-June 1.

Natl. Assn. of Purchasing Agents, annual meeting, Waldorf-Astoria Hotel, New York, N.Y., June 3-6.

Natl. Fertilizer Assn., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 11-13.

Natl. Organic Chemistry Symposium, Shirley-Savoy Hotel, Denver, Colo., June 12-15.

Amer. Council of Comml. Laboratories, Ambassador Hotel, Los Angeles, Calif., June 14-15.

Mfg. Chemists Assn., annual meeting, joint outing with SOCMA, Greenbrier Hotel, White Sulphur Springs, W. Va., June 14-16.

Synth. Org. Chem. Mfrs. Assn., joint outing with MCA, Greenbrier Hotel, White Sulphur Springs, W. Va., June 14-16.

Amer. Plant Food Council, annual meeting, The Homestead, Hot Springs, Va., June 14-17.

Chem. Inst. of Canada, annual conf., Winnipeg, June 18-20.

Amer. Soc. for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, June 18-22.

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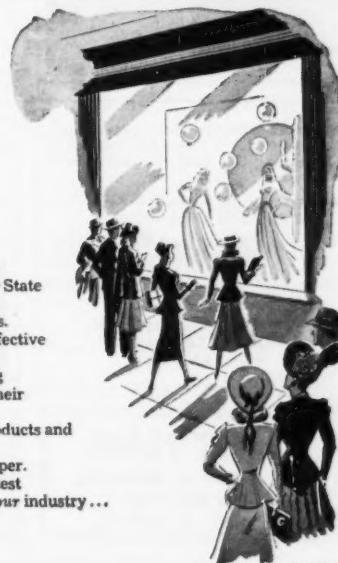
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Ethylene Chlorobromide	26B
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Trichlorobromide	26B
Xenon	25C

## NEW EQUIPMENT

Chromium Plating	26A
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Distilled red oil	25c	Controlled humidity air conditioning method, bulletin 98	3
Red oil	24	G-fumigant applicators	8-9c
White oleic acid	25b	Hot lacquer	28-29a
For processing cottons, rayons & woolens	25a	Packaging equipment, label pasters	B22
For producers of essential oils & perfumes	T21	Plant sites served by railway	10
Gilsonite	1a	Resins for adhesives	28-29c
Gloss oils	2e	Separation process, heavy media	8-9e
Gluconic acid	30	Surface-active agent B-48	28-29b
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Insecticide concentrates	B35	General line	1c
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Menadione	T41a		
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Phosphorus & phosphorus compounds	B21a		
Pitch compounds	1b		
Propyl gallate	T41d		
Resins, derez	2d		
Rosins, limed & pale wood	2b		
Sal soda	B26c		
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Shingle stain oils	T26		
Sodium & potassium compounds	B21b		
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### Editorial Items

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2a	3	8-9d	18	T22	25b	B26b	28-29c	T35	T41c	
2b	4									

Expires August 19, 1951

# BOOKLETS . . . .

## Chemicals

### Molybdenum Disulfide

55-p. booklet containing excerpts from technical papers on the subject of molybdenum disulfide as a lubricant. Each excerpt discusses a particular phase of the subject with reference to the apparatus used, methods of procedure, results of the study and available literature references; diagrams and illustrations emphasize pertinent facts and operations. The Climax Molybdenum Co.

### Inorganic Chemicals

Inorganic production chart in the form of continuous flow chart to illustrate the methods of production, from the basic raw materials to the finished products, of soda ash, chlorine, caustic soda, calcium carbonate, dry ice and other inorganic chemicals. Wyandotte Chemicals Corp.

### N-Bromacetamide

Catalogue sheet presenting information on the physical properties, reactions and uses, oxidations, storage and handling in addition to a bibliography on N-bromacetamide. Arapahoe Chemicals, Inc.

### Aluminum Paint Pigment

4-p. bulletin describing an aluminum paste as a standard lining type of pigment for use in the pigmentation of aluminum paints especially useful in industrial and maintenance applications. Metals Disintegrating Co., Inc.

## Equipment

### Nozzles, Welding Necks and Flanges

44-p. illustrated catalogue giving detailed information on nozzles, welding necks and large diameter flanges with sections devoted to such topics as manufacturing procedure, technical societies, physical and chemical requirements for forged or rolled steel flanges, modern flange design, pressure ratings, etc. Taylor Forge & Pipe Works.

### Piping

24-p. booklet pointing out firm's experience and engineering facilities for fabrication and erection of industrial piping with multiple photos showing piping installations in steel mills, for gas transmission systems, central power stations, water pumping stations, heating plants, oil refineries, and chemical process plants. Dravo Corp.

### Fittings

8-p. bulletin describing corrosion-resistant fittings and showing how light-walled corrosion-resistant piping reduces the cost of a typical piping layout. Horace T. Potts Co.

### Electro-Chemical Measurement

24-p. technical bulletin explaining the fundamentals of industrial electrochemical measurements plus the final control

elements for automatic control systems with reference to the measurement of pH, redox and conductivity in industrial control systems. Minneapolis-Honeywell Regulator Co.

### Valves

4-p. bulletin describing the advantages of "Rollo" valves for viscous liquids and liquids with solids. Worthington Pump and Machinery Corp.

### Thermocouples

Chart showing the applications, calibration symbols, conductors, polarity and Thermo Electric, Instrument Society of America (ISA) and military color codes of thermocouples and extension wires, with resistance tables for these wires shown on the reverse side. Thermo Electric Co.

### Recorder

4-p. bulletin describing Model MD-2 recorder, a portable, self-contained instrument of the microformer type which will plot automatically on rectangular coordinates any two variables that can actuate the movable cores of miniature variable transformers. Baldwin-Lima-Hamilton Corp.

### Induction Heater

4-p. bulletin dealing with electronic type induction heater for use in high-speed annealing, brazing, hardening and soldering; it is designed in such a way that only the control and accessories required for a particular type heating application are needed. General Electric Co.

### Laboratory Equipment

16-p. illustrated bulletin giving concentrated data on the construction, operation and performance of technical devices for the laboratory; covered are portable autoclaves, midget refrigerator, vacuum control manostats, motor-driven blender, Rotameter flowmeter, etc. Andrew Technical Service.

### Sulfide Production

4-p. bulletin on "FluoSolids Roasting of Sulfides," a new method utilizing the principle of fluidization for producing sulfur dioxide gas for sulphuric acid manufacture, paper mill and other industrial uses. The Dorr Co.

### Loading Docks

4-p. folder dealing with design and construction features, operation and typical installations of adjustable loading docks in order to speed up freight handling and loading operations. Rowe Methods, Inc.

### Faceshields

4-p. folder presenting faceshields with two interchangeable types of visors—the "Chempruf" designed for protection against chemical splash and the "Chipruf" as a safeguard against light flying particles. Mine Safety Appliance Co.

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## BUSINESS STAFF

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